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CHLOROTHIAZIDE: A NEW DIURETIC.

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CHLOROTHIAZIDE (6-chloro-7-sulphamyl-1,2,4-benzothiadiazine-1,1-dioxide) has recently been introduced as an orally effective diuretic compound. In animals, it induces a marked increase in the output of water, sodium and chloride, and has little effect on bicarbonate excretion (Beyer, 1957). Further, it appears to maintain its efficacy when given over prolonged periods.

A trial was undertaken to study its effects in a normal person, in patients with previous episodes of cardiac failure and in patients with abnormal fluid retention.

Clinical Material.

The immediate effects (over a period of 14 hours) of chlorothiazide on the water and electrolyte excretion were studied in three non-oedematous subjects, namely, a normal person taking an unrestricted diet, and two patients who had previously suffered from congestive cardiac failure.

¹This work was carried out during the tenure of the Edward Wilson Fellowship.

The effects of continued or repetitive administration were observed in 24 oedematous patients. Of these, 14 were in-patients (aged 32 to 79 years), and were subjected to detailed investigation concerning excretion of fluid and electrolytes; 10 were out-patients, in whom detailed investigation was not possible, and results could be assessed only by the patients' clinical state. This report is based mainly on the results in the 14 in-patients. The diagnoses were as follows.

There were 11 patients with congestive cardiac failure, which was due to rheumatic heart disease in five, to ischaemic heart disease in three, to hypertensive heart disease in one, to heart disease after emphysema in one, and to heart disease of uncertain aetiology in one. There were two patients with subacute glomerulonephritis, and one with diabetic nephropathy. Several of the patients with congestive cardiac failure had experienced one or more previous episodes of decompensation; at the time of study five were relatively or absolutely refractory to mercurial diuretics.

Methods.

The in-patients were confined to bed until complete relief from oedema had been achieved. The dietary sodium was restricted to one gramme (44 milliequivalents) daily. In some patients fluid intake was restricted, while others were permitted or encouraged to drink freely. For several days prior to and during the administration of chloro-

thiazide, all other forms of specific diuretic therapy were stopped; however, digitalis was continued in those patients who required it. When it was decided to alternate chlorothiazide with another diuretic, at least one and usually two days were left free of specific therapy between the treatments.

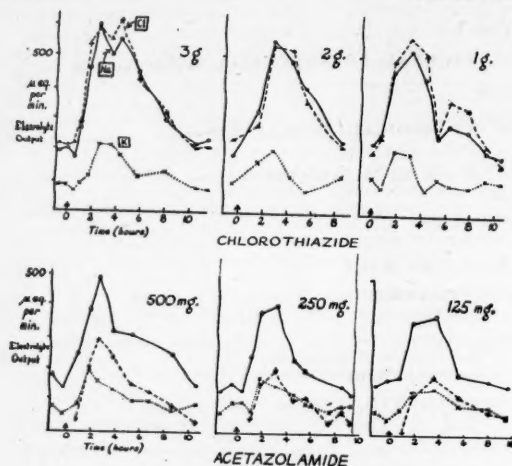


FIGURE I.

Comparative effect of individual doses of chlorothiazide and acetazolamide on urinary electrolyte excretion. Dose given at time 0. Chlorothiazide: —○—○—, Na⁺; ····x····, K⁺; - - - - -□- - - - -, Cl⁻; - · - · -△- · - · - -, HCO₃⁻. Acetazolamide: —○—○—, Na⁺; ····x····, K⁺.

Careful records were kept of fluid intake and output, and when possible the patients were weighed daily. Specimens of urine were analysed chemically for sodium, potassium and chloride, and the bicarbonate content was calculated from the Henderson-Hasselbalch equation after the volumetric estimation of carbon dioxide (van Slyke and Stadie, 1921) and the determination of urine pH (glass electrode) had been made.

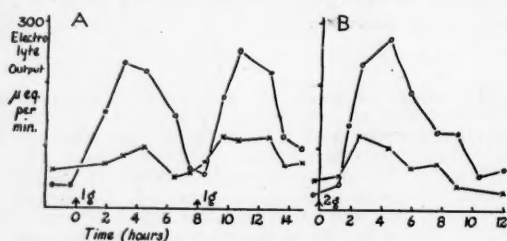


FIGURE II.

Comparative effect of two doses of one gramme of chlorothiazide with an interval of eight hours, and of a single dose of two grammes. —○—○—, Na⁺; ····x····, K⁺.

To determine the urinary output of chlorothiazide, an aliquot of diluted urine was hydrolysed and acidified, and the amino group diazotized and coupled to produce a pinkish-mauve azo dye. Colour intensity was read in an EEL colorimeter at 515 millimicrons.

Immediate Effects in Non-Œdematous Subjects.

On different occasions a normal subject received 250 milligrammes, 500 milligrammes, one gramme, two grammes and three grammes given one hour after breakfast. Complete urine collections were made at intervals from one to two hours before and up to 14 hours after each dose. The subject took a normal diet with no restriction of sodium;

however, fluids were limited to 1200 millilitres on the day of the test. Little diuretic effect was noted with the smallest two doses; with the higher doses, urine output increased within half to one hour, and the effect persisted for three to six hours. Sodium and chloride output increased by comparable amounts, reaching peak levels two to four hours after administration of the drug, and declining to normal levels in eight to 12 hours with the doses of one to three grammes, and in six hours with the 500 milligrammes dose. Little effect was observed with the 250 milligrammes dose. Potassium output increased to a much smaller and more variable degree, and there was no significant effect on bicarbonate content. The response to the dose of one gramme was only slightly inferior to those to the higher doses. In Figure I the major changes in the pattern of electrolyte excretion are compared with those after graded doses of acetazolamide on different occasions in the same person. Similar results were obtained in a cardiac patient on a restricted sodium diet. In another such patient the response to a single dose of two grammes was compared with the response to two doses of one gramme given with an interval of eight hours, one week later. The latter schedule was more effective (Figure II).

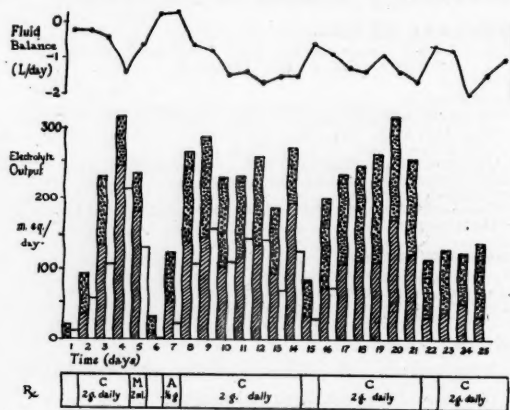


FIGURE III.

Twenty-four-hour outputs of Na⁺, K⁺ and Cl⁻ during treatment with chlorothiazide (C), mersalyl (M) and acetazolamide (A) by the patient in Case IV. Na⁺, shaded column; K⁺, dotted column; Cl⁻, white column. Note the progressive increase of efficacy during first three to four days' therapy with chlorothiazide. The net daily fluid balance is shown, 600 millilitres being taken as the daily loss by routes other than the urine.

After an oral dose of 500 milligrammes, chlorothiazide was detected in the urine within half to one hour, reached a peak in two to three hours and then gradually declined, although small quantities continued to be excreted up to 24 hours later. The twenty-four-hour urinary output of chlorothiazide was estimated over a period of 11 days in a patient receiving two grammes daily. Recovery varied from 150 to 280 milligrammes per day (mean 200 milligrammes).

Effects of Continued Administration in Œdematous Patients.

Chlorothiazide was usually given in a dose of one gramme twice daily; in a few cases two grammes were given in a single dose. Courses varied from three days to two weeks. In some instances chlorothiazide was alternated with mersalyl or with acetazolamide.

Eight of the 11 patients with congestive cardiac failure gave a satisfactory response. A negative water balance occurred on the first day of treatment, together with a considerable increase in the output of sodium and chloride. In three of these patients the effect increased over the next two or three days. As in the experiments already mentioned, surplus sodium and chloride were eliminated

in approximately equivalent amounts. A moderate increase in potassium output was usually, but not invariably, observed. In Case IV, referred to later, marked and prolonged potassium loss occurred. Prolonged administration resulted in a prolonged diuresis, natriuresis and chloruresis; the effects waned only as the patients became

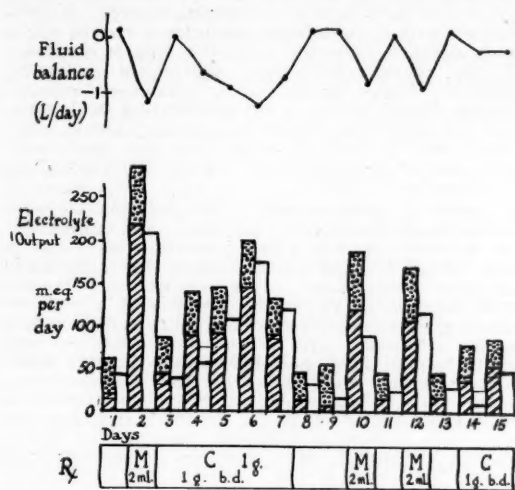


FIGURE IV.

Twenty-four-hour outputs of Na⁺, K⁺ and Cl⁻, and net daily fluid balance chart for the patient in Case IX (abbreviations and symbols as in Figure III).

œdema-free. Thus the drug is not self-limiting in its effectiveness, showing marked contrast in this respect from carbonic anhydrase inhibitors such as acetazolamide.

Chlorothiazide was given as the sole form of diuretic therapy to three patients; in the remaining eight it was alternated with mersalyl or acetazolamide or both. Comparative effects on fluid balance and on twenty-four-hour

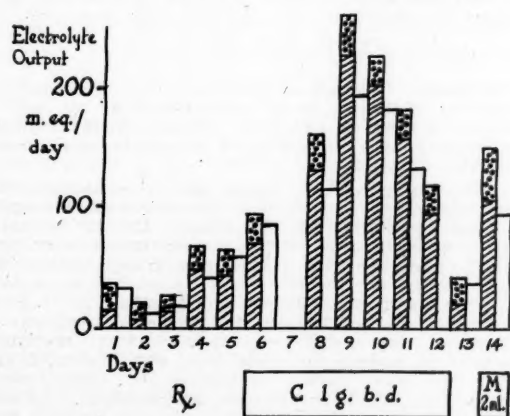


FIGURE V.

Twenty-four-hour outputs of Na⁺, K⁺ and Cl⁻ for the patient in Case I (abbreviations and symbols as in Figure III).

electrolyte output are best shown in graphic form (Figures III to VI). Chlorothiazide (two grammes dose) was consistently more effective than acetazolamide (500 milligrammes) and comparable with mersalyl (two millilitres).

The most striking response in the series occurred in the patient in Case IV.

The subject was a male, aged 54 years. Seven years previously, when in Germany, he was found to have essential hypertension. For six months before his admission to hospital he had swelling of the ankles and increasingly severe dyspnoea on exertion. More recently he had a persistent cough with profuse expectoration. Initially, these symptoms responded to intramuscular mercurial preparations, but latterly he obtained no benefit from them. On his admission to hospital he was hypertensive (blood pressure 155/125 millimetres of mercury) and had gross features of congestive cardiac failure. He weighed 89 kilograms. Treatment was commenced with complete bed rest, with dietary sodium restricted to one gramme daily, and with continued administration of digoxin 0.25 milligramme daily. The doses of chlorothiazide and of the other diuretics, together with the daily excretion of sodium, potassium and chloride, and the daily fluid balance, are indicated in Figure III. The daily urine output and body weight for the duration of his stay in hospital are shown in Figure VII. He was discharged

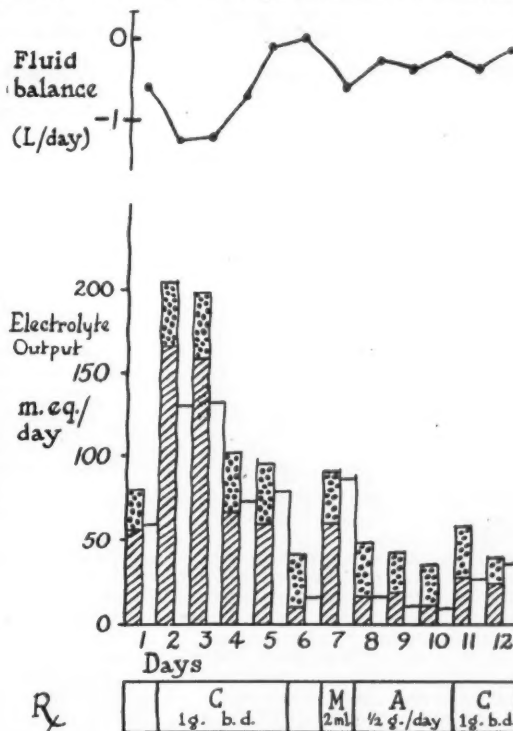


FIGURE VI.

Twenty-four-hour outputs of Na⁺, K⁺ and Cl⁻, and net daily fluid balance chart for the patient in Case XII (abbreviations and symbols as in Figure III).

from hospital feeling fit, with a blood pressure of 120/95 millimetres of mercury and with a weight of 73 kilograms. Since then he has taken chlorothiazide, 0.5 to 1.0 gramme per day. When last seen, 15 weeks after his discharge from hospital, he had resumed work as a butcher and was maintaining a weight of 75 kilograms and a blood pressure of 140/95 millimetres of mercury.

Three œdematous cardiac patients responded poorly.

A man, aged 68 years (Case X) had severe rheumatic heart disease, with several previous episodes of decompensation. During his present admission to hospital, the blood urea concentration was 70 milligrammes per 100 millilitres, and he had no response to mersalyl, thimerin, acetazolamide or cation-exchange resin. At this stage chlorothiazide was given, but the response was slight and transitory.

A woman, aged 34 years (Case VIII), had long-standing rheumatic heart disease, with aortic, mitral and tricuspid valvular incompetence, pleural effusions, peripheral œdema, hepatic congestion, and ascites. She had been confined to bed for 12 months, and recently had obtained no benefit from mersalyl or thimerin. Chlorothiazide also failed to induce diuresis until abdominal paracentesis was performed, with

the removal of 3.5 litres of fluid. Despite continued sodium restriction and administration of chlorothiazide after her discharge from hospital, the ascites soon recurred.

A woman, aged 65 years (Case III), had severe hypertension for at least the last 10 years, with angina pectoris and recurrent episodes of cardiac failure. She was admitted to hospital with recent cardiac infarction. The blood pressure was 170/120 millimetres of mercury; the blood urea concentration was 65 milligrammes per 100 millilitres; and there was oedema of the lower limbs, despite treatment with salt restriction, digoxin and mersalyl. The response to chlorothiazide lasted for only 24 hours and she died a few days later.

Chlorothiazide was administered to two patients with subacute glomerulonephritis, and in each case a satisfactory response was obtained.

A woman, aged 61 years, with diabetic renal disease (blood urea concentration of 60 milligrammes per 100 millilitres) was given alternating three-day courses of chlorothiazide and acetazolamide. In this instance acetazolamide produced the more effective response.

The 10 out-patients comprised seven with congestive cardiac failure, two with subacute glomerulonephritis and one with the Budd-Chiari syndrome with ascites and

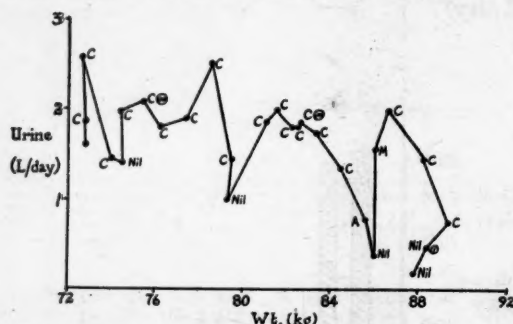


FIGURE VII.

Daily urine volume plotted against body weight for the patient in Case IV.

peripheral oedema. A satisfactory diuresis was obtained in the first nine of these, and in the tenth the ascites was controlled more effectively than with mersalyl.

One of the patients (Case XVIII) with previously intractable cardiac failure developed a serious electrolyte disturbance during treatment with chlorothiazide.

The patient, a woman aged 36 years, with rheumatic heart disease, had been admitted to hospital several times previously with congestive failure. On her last admission she was orthopnoic, her jugular veins were distended to the angle of the mandible when she was sitting, her liver was palpable 15 centimetres below her costal margin; peripheral oedema was present, and a harsh pansystolic murmur radiating to her axilla and a short mitral mid-diastolic murmur were audible. The plasma electrolyte levels (milliequivalents per litre) were: sodium, 136; potassium, 5.0; chloride, 100; bicarbonate, 21. Mersalyl and ethoxzolamide ("Cardrase") both failed to promote diuresis. Chlorothiazide was then given (two grammes daily), and acupuncture of the legs performed. A moderate diuresis ensued, the legs drained satisfactorily, and her general condition improved. Ten days later she became weak and disorientated and biochemical investigation indicated a severe hypokalaemic hypochloræmic alkalosis. Plasma electrolyte levels (milliequivalents per litre) then were: sodium, 123; potassium, 2.4; chloride, 77; bicarbonate, 32. Despite replacement therapy with potassium chloride and sodium chloride, and reduction in the dose of chlorothiazide to one gramme daily, her condition continued to deteriorate and she died.

Discussion.

In vitro, chlorothiazide is an inhibitor of carbonic anhydrase, but its potency in this respect is only moderate (Baer, J. E., quoted in Schreiner and Bloomer, 1957). *In vivo*, doses within the therapeutic range result in little or no increase in the urinary output of bicarbonate, and in consequence metabolic acidosis does not occur. The present study has confirmed that chlorothiazide, in con-

trast with other carbonic anhydrase inhibitors, is a potent chloruretic agent, sodium and chloride being excreted in approximately equivalent amounts. It causes also a smaller and more variable increase in potassium loss. In association with the electrolyte loss there is a water diuresis, which is only moderate in patients with a normal fluid state and does not last for more than the initial two or three days of continuous therapy. However, in patients with abnormal fluid retention a marked diuresis usually occurs and persists until the drug is stopped, or until all surplus fluid and electrolytes have been eliminated. Thus, unlike other carbonic anhydrase inhibitors, chlorothiazide is not self-limiting in its action. Indeed, the pattern of electrolyte excretion which it induces is more akin to that resulting from the exhibition of organic mercurial preparations than of the classical carbonic anhydrase inhibitors.

The mode of action whereby the excretion of sodium and chloride is increased is still uncertain. However, it is of interest that the three patients with congestive cardiac failure who did not respond to chlorothiazide had severe renal impairment. This suggests that the drug depends for its activity on the presence of a reasonable level of glomerular filtration. Inulin and para-amino hippurate clearances were estimated immediately before and one to one and a half hours after an oral dose of two grammes in two people, the first a normal young man and the second a patient with hypertension and diabetic nephropathy (Table I). In the normal man there was a slight fall in both values, the filtration fraction remaining unchanged, and there was a marked diuresis

TABLE I.
Renal Clearance Values Before and After Administration of Two Grammes of Chlorothiazide.

Subject.	Clearance. (Millilitres per Minute.)		Filtration Fraction. (Percentage.)
	Inulin.	Para-Amino Hippurate.	
Normal man:			
Before chlorothiazide ..	153	727	21
After chlorothiazide ..	125	637	20
Patient with renal failure:			
Before chlorothiazide ..	57	180	36
After chlorothiazide ..	57	166	34

and saluresis. The patient with impaired renal function evinced no change in renal hemodynamics, but had a moderate increase in salt loss. These findings indicate that chlorothiazide does not act simply by augmenting glomerular filtration.

In the one patient in whom the determination was made, only a small proportion of the daily dose, averaging 10%, was recovered from the urine. During long-term administration in dogs, urine recovery varied from 26% to 39% (Beyer, 1957). Moderate dosage (e.g., one gramme daily for several weeks) produces no serious electrolyte disturbance (Barnett and Marshall, 1958). However, there is a real danger that prolonged treatment in high doses may induce serious electrolyte imbalance, especially in patients receiving diets with restricted salt content or those losing electrolytes by other routes (vomiting, diarrhoea, paracentesis, acupuncture). As with the organic mercurial compounds, incautious therapy may induce hypochloræmic alkalosis. Hypokalaemia is another potential hazard, particularly to be avoided in patients receiving digitalis preparations. These complications occurred in one patient in the investigation (Case XVIII).

It is clear that precautions must be taken with patients receiving long-term treatment: rigid salt restriction should be avoided, a close watch should be kept for early symptoms of electrolyte disturbance, and periodic estimations of the plasma electrolyte levels should be made.

Various reports are now to hand concerning the value of chlorothiazide as a diuretic agent (Ford *et al*, 1957; Schreiner and Bloomer, 1957; Bayliss *et al*, 1958; Slater

and Nubarro, 1958; Finnerty *et alii*, 1958). Most of the reports give instances of electrolyte disturbances, particularly low serum potassium levels and hypochloræmic alkalosis, from prolonged administration, and suggest certain precautions—intermittent administration, periodic estimation of serum electrolytes and increased potassium intake.

Conclusions.

The study reported in this paper has confirmed that chlorothiazide is a potent oral diuretic agent comparable in its efficiency with parenteral mersalyl and superior to acetazolamide and, over the period of the investigation, has proved free of undesirable side effects apart from those due to fluid and electrolyte loss, which are really a measure of its potency. More experience is required, particularly in respect to possible toxic effects or the development of a refractory state after prolonged use, before a final evaluation can be made. However, these have not been noted in patients treated for up to three months. It is a useful alternative to mercurial drugs, and, in fact, sometimes produces a diuresis in patients refractory to these drugs, and has the advantages of oral administration and avoidance of risk of heavy metal poisoning. Altogether, it is a drug of marked pharmacological interest and therapeutic possibility, and is likely to prove a boon in the management of patients with oedema.

Summary.

In non-oedematous normal and cardiac subjects chlorothiazide causes a marked excretion of sodium and chloride, a smaller and more variable increase in potassium loss and no significant change in bicarbonate output. The effect is more marked with increasing doses from 250 milligrammes to one gramme; larger doses than this are only slightly more effective. Saluresis persists for six to 12 hours, depending on the dose. The drug is more effective in divided doses. There is a moderate diuretic effect with doses of one gramme or more.

Eight of the 11 patients with congestive cardiac failure had a satisfactory response to continuous administration at a dosage of two grammes daily. Chlorothiazide was a more effective diuretic agent than acetazolamide, and was usually comparable in potency with mersalyl. The three patients who failed to respond had severe renal impairment and were refractory to mersalyl.

Two patients with subacute nephritis responded favourably, but a third patient with diabetic renal disease responded less well to chlorothiazide than to acetazolamide.

Ten further patients with fluid retention from cardiac, renal and hepatic disease had a satisfactory response to chlorothiazide.

One patient developed a serious electrolyte disturbance, which appeared to contribute to her death.

The potential hazards of prolonged administration to patients with electrolyte disturbances and to those receiving salt-poor diets are stressed. A careful watch should be kept for early symptoms of serious electrolyte disturbance, and periodic estimations of plasma electrolyte levels are recommended.

Acknowledgements.

I am indebted to Dr. T. E. Lowe for his advice and criticism, to Drs. A. J. Barnett, J. E. Clarke, M. C. Davis, A. E. Doyle, J. M. Gardiner, H. B. Kay and Mr. K. N. Morris for access to patients under their care, and to Mr. A. G. Marr, M.Sc., for invaluable cooperation in the biochemical investigations. The chlorothiazide, which is marketed in Australasia as "Chlotride", was part of a generous gift to the Baker Medical Research Institute from Merck, Sharp and Dohme (Australia) Proprietary Limited.

References.

- BAYLISS, R. I. S., MARRACK, D., PIRKIS, J., REES, J. R., and ZILMA, J. F. (1958), "Chlorothiazide: An Oral Diuretic", *Lancet*, 1: 120.
- BEYER, K. H. (1957), "Chlorothiazide: Preclinical Evaluation as a Saluretic Agent", Research Laboratories, Merck & Co. Inc., West Point, Pennsylvania.
- BARNETT, A. J., and MARSHALL, R. J. (1958), "Treatment of Hypertension with a Combination of Chlorothiazide and Mecamylamine", *M. J. AUSTRALIA*, 2: 521.
- FINNERTY, F. A., junior, BUCHHOLZ, J. H., and TUCKMAN, J. (1958), "Evaluation of Chlorothiazide (Diuril) in the Toxemias of Pregnancy", *J.A.M.A.*, 166: 141.
- FORD, R. V., MEYER, J. H., and SPURR, C. L. (1957), "Clinical and Laboratory Observations on Chlorothiazide (Diuril)", *Arch. Int. Med.*, 100: 582.
- LARAGH, J. H., HEINEMANN, H. O., and DEMARTINI, F. E. (1958), "Effect of Chlorothiazide on Electrolyte Transport in Man. Its Use in the Treatment of Edema of Congestive Heart Failure, Nephrosis and Cirrhosis", *J.A.M.A.*, 166: 145.
- SCHREINER, G. E., and BLOOMER, H. A. (1957), "Effect of Chlorothiazide on the Edema of Cirrhosis, Nephrosis, Congestive Heart Failure and Chronic Renal Insufficiency", *New England J. Med.*, 257: 1016.
- SLATER, J. D. H., and NABARRO, J. D. N. (1958), "Clinical Experience with Chlorothiazide", *Lancet*, 1: 124.
- VAN SLYKE, D. D., and STADIE, W. C. (1921), "The Determination of the Gases of the Blood", *J. Biol. Chem.*, 49: 1.

TREATMENT OF HYPERTENSION WITH A COMBINATION OF CHLOROTHIAZIDE AND MECAMYLAMINE.

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THE value of ganglion-blocking drugs in the treatment of hypertension is limited by variability in absorption when given orally and by the occurrence of unpleasant side effects due to parasympathetic blockade. Mecamylamine represents an advance over the quaternary ammonium compounds in that it is well absorbed from the gastro-intestinal tract (Ford *et alii*, 1956). However, parasympathetic side effects are no less troublesome than with the methonium drugs, and in high dosage there is a considerable incidence of diarrhoea and even of necrosis of the large bowel (Barnett, 1958).

Preliminary reports have suggested that chlorothiazide,² a new diuretic compound, enhances the activity of ganglioplegic drugs. As we consider that any treatment which might permit a reduction in the requisite dosage of mecamylamine should be investigated, a short-term trial of combined therapy with mecamylamine and chlorothiazide was undertaken.

Materials and Methods.

Fourteen patients, all with essential hypertension, were admitted to the trial. One was a child aged six years, who had previously undergone operation for suspected unilateral renal disease; the remainder, seven men and six women, were aged from 36 to 63 years. Five (Cases I, II, IX, X and XIV) had originally presented between four and seven years previously, with hypertension in the malignant phase, as diagnosed by the presence of papilloedema. All had been treated with mecamylamine for periods of two to fifteen months before the present trial commenced, and a stable dosage had been achieved. In addition, 11 patients were receiving reserpine and two others hydralazine. These drugs were continued, with one exception (Case V), without modification throughout the trial.

The patients attended weekly, and at each visit the blood pressure was measured by sphygmomanometry with the patients in the upright, sitting and recumbent positions, the diastolic pressure being taken at the point where sounds disappeared. The patient was weighed, and alterations in preexisting symptoms or any new symptoms were noted. Estimations of the serum electrolyte levels (sodium, potassium, bicarbonate and chloride) were made before, during and after the trial, and in some cases leucocyte and platelet counts were performed.

Chlorothiazide was given at a dose of 0.5 gramme twice daily. The child aged six years received half this amount.

¹ Edward Wilson Memorial Fellow.

² 6-chloro-7-sulphamyl-1,2,4-benzothiadiazine-1,1-dioxide.

We intended to maintain the dose of mecamlamine for the first two weeks of the trial at its previous level, and to modify the dose subsequently according to the response. However, several patients developed severe postural hypotension within three to seven days of commencing chlorothiazide, so this plan was not practicable in all cases.

The value of the combined therapy was assessed by: (i) the reduction in the amount of mecamlamine needed to maintain the blood pressure at approximately the level achieved before the trial; (ii) amelioration of the side effects from mecamlamine.

In addition, information was obtained concerning changes in body weight and serum electrolyte levels.

Changes in Requirement of Mecamlamine.

In Table I are recorded the blood pressures for all patients in the upright, sitting and recumbent positions, initially and at the end of the trial. The initial pressures are the average of two or three weekly readings before

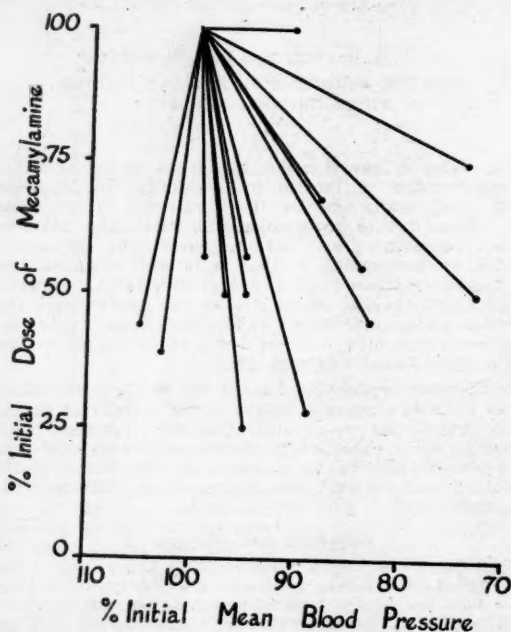


FIGURE 1.

Alterations in the requirement of mecamlamine and in the mean blood pressure after four weeks' treatment with one gramme of chlorothiazide daily.

the trial started, and the "mean" pressure is taken as the diastolic plus half the pulse pressure. Owing to a temporary short supply of the drug, two patients (Cases X and XI) completed only three weeks of the trial, and the data refer to blood-pressure readings at the end of this shorter period. For each of the three positions in which blood-pressure readings were made, the "mean" blood pressure at the end of the trial is expressed as a percentage of the initial mean blood pressure. The table also shows the daily dose of mecamlamine before and at the end of the trial, and in the last column the latter dose is expressed as a percentage of the former.

It is seen that, at the end of the trial, the average "mean" blood pressure for the series of 14 patients in the upright position was 92% of the initial level. In ten patients the alteration in pressure was slight (mean blood pressure 86% to 105% of the initial level) and in two (Cases III and IX) a marked fall occurred ("mean" blood pressure less than 75% of the initial level). In

TABLE I.
Summary of Results of the Trial.

Case.	Sex.	Age. (Years.)	Blood Pressures (Millimetres of Mercury) Before and During Treatment with Chlorothiazide. ¹												Dose of Mecamlamine, (Milligrammes per Day.)		"Mean" Blood Pressure During Chlorothiazide Treatment as Per-centage of Initial.			Dose of Mecamlamine During Chlorothiazide Treatment as Per-centage of Initial.
			Upright.						Sitting.						Recumbent.		Upright.	Sitting.	Recumbent.	
			Before Treatment.			During Treatment.			Before Treatment.			During Treatment.			Before Chlorothiazide Treatment.	During Chlorothiazide Treatment.				
			S/D.*	M.*	S/D.	S/D.	M.	S/D.	S/D.	M.	S/D.	M.	S/D.	M.						
1	F.	63	137/91	114	112/78	95	127/98	133	152/94	123	163/98	131	190/105	148	50	23.5	83	92	113	45
2	M.	42	139/88	114	130/95	113	172/117	145	170/110	140	184/119	152	196/125	160	35	20	99	97	105	57
3	F.	41	135/116	150	128/90	109	163/116	155	140/90	115	205/128	166	170/100	135	40	20	99	74	85	50
4	F.	41	145/102	124	130/94	112	163/112	150	150/112	131	170/110	140	170/110	140	45	20	105	101	100	44
5	F.	44	145/102	124	130/94	112	163/112	150	150/112	131	170/110	140	170/110	140	115	30	89	90	103	28
6	F.	6	183/131	157	170/130	150	202/141	173	160/130	145	202/141	175	202/141	175	30	25	84	84	92	25
7	M.	57	162/106	134	155/110	133	160/110	135	160/110	135	165/110	135	164/108	135	30	15	100	98	103	50
8	M.	40	143/104	124	138/96	117	147/105	126	134/90	112	140/99	123	160/104	132	30	15	96	73	77	50
9	M.	45	181/120	151	130/92	111	200/120	163	142/96	119	213/130	172	206/120	163	45	37.5	89	81	97	48
10	F.	56	214/121	168	180/106	143	215/124	170	175/100	138	226/131	179	205/120	165	55	30	85	85	94	55
11	F.	45	157/111	134	128/96	112	158/111	135	130/100	115	194/116	155	165/125	145	140	80	95	91	91	57
12	F.	38	157/111	134	128/96	112	158/111	135	130/100	115	194/116	155	165/125	145	140	80	95	98	100	100
13	F.	50	187/127	157	160/110	130	187/127	157	160/110	130	187/127	157	160/110	130	90	90	91	94	102	39
14	M.	50	154/111	133	150/116	136	163/109	136	144/110	127	163/125	157	165/125	160	45	17.5	103	94	102	
Averages																	92	90	97	53

* "S" = systolic, "D" = diastolic.

* Completed three weeks' trial only.

¹ Average of two or three readings at intervals of one week.

* "M" = mean (taken for convenience as $\frac{S+D}{2}$).

the latter instances, control of blood pressure, previously unsatisfactory, became good. It was possible to reduce the daily dose of mecamlamine in 13 of the 14 patients by amounts varying from 25% to 75%, the average decrease for all 14 patients being 47%. The data relating to alterations in "mean" blood pressure and to dose of mecamlamine are plotted in Figure I.

It is seen that, while chlorothiazide was efficient as an antipressor agent irrespective of posture, it was slightly more effective in the upright and sitting positions.

Changes in Side Effects.

Eleven patients complained of one or more symptoms due to mecamlamine therapy. These were most commonly due to parasympathetic blockade (blurring of vision, dry mouth, constipation, impotence), but some were attributable to direct side effects of mecamlamine (diarrhoea, heartburn, anorexia) and to occasional postural

TABLE II.
Changes in Side Effects.

Side Effects.	Effect of New Regimen.		
	Worse.	Unchanged.	Improved.
Constipation	0	4	6
Dry mouth	2	2	3
Blurred vision	1	1	3
Impotence	0	1	1
Diarrhoea	0	1	2
Heartburn	0	0	1
Anorexia	0	0	1
Faintness	5	2	0

hypotension (faintness). On the combined treatment, reduction in the dose of mecamlamine resulted, in most cases, in improvement or abolition of the symptoms from parasympathetic blockade and from the direct irritant effect of the drug on the gastro-intestinal tract. Faintness, however, was not mitigated, and four patients who previously were free from this symptom developed it occasionally while taking chlorothiazide, owing to the

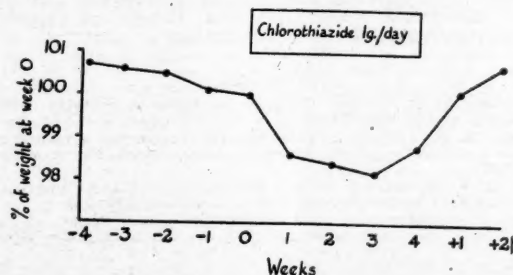


FIGURE II.

Alteration in body weight during treatment with chlorothiazide (average of 12 patients), expressed as a percentage of the initial weight.

occurrence of postural hypotension. Dryness of the mouth was sometimes decreased and sometimes increased (Table II). Eight patients noted mild or moderate diuresis during the first few days of treatment. Apart from this, and postural faintness, no symptoms occurred attributable to chlorothiazide. Leucocyte and platelet counts were performed before and at the end of the trial in seven patients, and in no case was any significant change noted.

Changes in Body Weight.

Two patients are excluded from consideration, one a growing child and the other a woman on a weight-reducing diet. Most of the remaining 12 patients lost weight during

the trial, the loss ranging from 0 to 2.7 kilograms (0 to 6 pounds). The weight was lost during the first week of the trial, and was regained within a week of stopping the drug. In Figure II the average weight in these 12 before, during and after the trial is plotted as a percentage of the weight on the day the trial commenced. During the same period there was no significant weight change in a group of 12 patients, chosen at random, who were not receiving chlorothiazide; the range was +0.9 to -1.4 kilograms (+2 to -3 pounds).

Changes in Serum Electrolyte Levels.

A fall in serum chloride level was almost invariable, with a mean of 104.2 (range 99 to 109) milliequivalents per litre initially, and of 98.0 (range 92 to 104) milliequivalents per litre after three or four weeks of combined

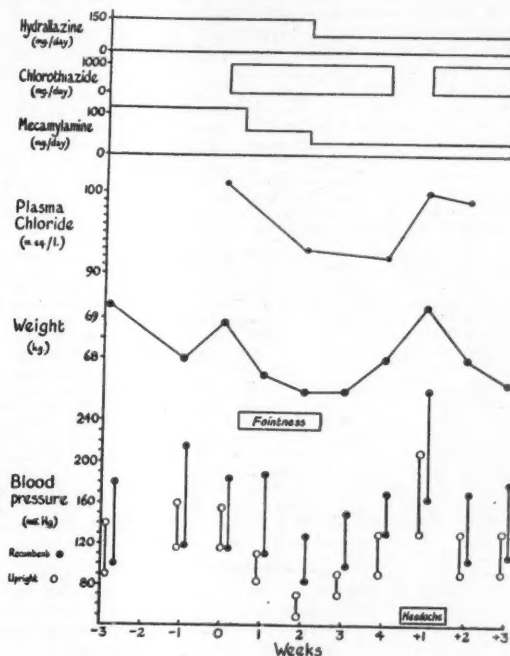


FIGURE III.

Chart showing changes in blood pressure (upright and recumbent positions), body weight, plasma chloride concentration and drug therapy during treatment with chlorothiazide in the patient in Case V.

therapy (data from 10 patients). The greatest fall occurred in the patient (Case V) with the most dramatic antipressor response. Serum potassium content tended to fall slightly, but in no case was the level under 3.9 milliequivalents per litre, and there was no consistent alteration in sodium or bicarbonate content.

Reports of Cases.

The following two cases are presented as illustrative of the dramatic benefit which may occur from the administration of chlorothiazide, particularly with regard to the relief of side effects from mecamlamine.

CASE V.—A woman, now aged 44 years, first attended this clinic five and a half years earlier, with a blood pressure of 260/160 millimetres of mercury. She was treated successively with parenteral hexamethonium bromide, parenteral pentolinium, oral pentolinium and a combination of the latter with reserpine, but control of the blood pressure was only fair. Thirteen months previously, treatment was changed to mecamlamine and hydralazine, with corresponding improvement in symptoms and in control of blood pressure. How-

ever, she was still troubled by constipation, dry mouth and blurred vision due to her large daily requirement (115 milligrammes) of mecamylamine.

Within three days of starting chlorothiazide she noted moderate diuresis, increasing blurring of vision and postural faintness. Mecamylamine was immediately reduced to 60 milligrammes daily, and at the end of two weeks to 30 milligrammes daily. She felt much better, the side effects of therapy being only slight, and was able to read newsprint without glasses. Blood pressure control was satisfactory.

Three days after completing the trial, while still taking only 30 milligrammes per day of mecamylamine, severe headaches commenced for the first time in several years. At the end of one week they were incapacitating; her blood pressure was 210/130 millimetres in the upright position, 260/140 millimetres of mercury while sitting, and 270/165 millimetres of mercury while recumbent. Chlorothiazide was restarted, and within three days the headaches were relieved. Subsequently, blood pressure control remained satisfactory on chlorothiazide and mecamylamine 30 milligrammes per day with a reduced dose of hydralazine.

Changes in her blood pressure, body weight, plasma chloride level, drug dosage and symptoms are indicated in Figure III.

CASE VI.—A young boy, aged six years and weighing 19 kilograms (41 pounds), had recurrent episodes of epistaxis and was irritable and subject to tantrums since the age of two and a half years. Full investigations elsewhere revealed no cause for the hypertension. However, a double left ureter, was noted on the pyelogram, and nephrectomy was performed in the hope that the hypertension might be due to some intrinsic lesion in the kidney. Unfortunately, the kidney was normal and no benefit followed the operation.

Subsequently, his blood pressure was 225/175 millimetres of mercury. Great difficulty was experienced in reducing this to even a reasonable level, and eventually a combination of mecamylamine 90 milligrammes, hydralazine 60 milligrammes and reserpine 0.375 milligramme per day was used. Even this had little effect; the diastolic pressure (upright) varied from 120 to 150 millimetres of mercury. Side effects, particularly continuous offensive diarrhoea, dry mouth, difficulty in micturition and nasal stuffiness, were intolerable, and he had frequent uncontrollable outbursts of rage. Chlorothiazide was given in a dose of 250 milligrammes twice a day, reserpine stopped, and mecamylamine reduced to 15 milligrammes daily. The side effects disappeared within a week and the dose of mecamylamine was cautiously increased to 22.5 milligrammes. Although his blood pressure shows no significant change, his behaviour has altered, in that he is now quite placid, and he is gaining weight.

Discussion.

Restriction in dietary sodium intake reduces the blood pressure in hypertensive patients (Kempner, 1948; Medical Research Council, 1950) and enhances the antipressor effect of a ganglion-blocking agent (Smirk and Alstad, 1951).

Chlorothiazide has recently been introduced as a potent and orally effective diuretic and saluretic agent. Its activity is comparable with that of the parenteral organic mercurial preparations, such as mersalyl, and it remains effective on prolonged administration (Beyer, 1957; Ford *et alii*, 1957; Schreiner and Bloomer, 1957; Marshall, 1958). Preliminary studies indicate that it potentiates the effect of ganglion-blocking drugs in hypertension (Freis and Wilson, 1957; Tapia *et alii*, 1957).

The trial reported here confirms the value of chlorothiazide in potentiating the action of ganglion-blocking drugs in hypertension. During the four-week period the dose of mecamylamine was gradually reduced in 13 of the 14 patients by approximately 50%, without any loss of the control of blood pressure.

With the diminution in requirement of mecamylamine there occurred decrease in most of the symptoms attributable to parasympathetic ganglionic blockade, with the exception of dryness of the mouth, which was sometimes unchanged or even worse; it seems that the effects of mild dehydration induced by chlorothiazide may counterbalance the benefit from reduced dosage of mecamylamine.

The potentiating effect of chlorothiazide is noted within two or three days. Thus several patients developed severe postural hypotension at this time. Also, the fall in body weight occurs within the first week (Figure II). Further,

the effect of chlorothiazide disappears soon after the drug is discontinued; the patient in Case V developed severe headaches from uncontrolled hypertension three days after the end of the trial.

Although no significant change occurred in plasma electrolyte concentrations in the four-day trial by Tapia *et alii*, during the four-week trial reported here there was a drop in chloride level in almost every case. Estimations of electrolyte levels should therefore be made at intervals during prolonged treatment, especially in patients with renal impairment, to guard against possible serious derangements. It seems unwise to give more than one gramme of chlorothiazide daily, and unnecessary to restrict dietary sodium intake. No toxic effects have yet been reported.

The mode of action of chlorothiazide as a hypotensive agent has not yet been fully elucidated, although its major effect probably occurs through a reduction of plasma volume secondary to loss of salt and water which, according to Tapia *et alii* (1957), is of the order of 17%. Its efficacy in enhancing the potency of ganglion-blocking drugs, permitting the latter to be used in lower dosage with less unpleasant side effects and dangerous complications, is established. Freis *et alii* (1958) have recently reported on their experience over periods from one to eight months with the use of the drug in hypertensive patients under treatment with other drugs. They gave an initial dose of 0.5 gramme twice daily. They found that after the administration of chlorothiazide there was a further fall in blood pressure. In patients taking ganglion-blocking agents the dose of the blocking agent could be reduced and in many cases eliminated, providing that the administration of other antihypertensive drugs—reserpine and/or hydralazine—was continued or substituted. Further long-term trials of the use of chlorothiazide in hypertension are clearly indicated.

Acknowledgements.

We are indebted to Dr. T. E. Lowe, Director of the Baker Medical Research Institute, for his advice and helpful criticism of this paper, to the nursing staff of the Alfred Hospital for help in carrying out the investigation, and to the laboratory staff of the Alfred Hospital for the haematological and biochemical investigations. The chlorothiazide ("Chlotride") was part of a generous gift by Merck, Sharp and Dohme (Australia) Proprietary Limited to the Baker Medical Research Institute.

References.

- BARNETT, A. J. (1958), "Colitis in Patients Treated with Ganglion-Blocking Agents", *M. J. AUSTRALIA*, 2: 525.
- BEYER, K. H. (1957), "Chlorothiazide: Preclinical Evaluation as a Saluretic Agent", Research Laboratories, Merck & Co. Inc.
- FORD, R. V., MADISON, J. C., and MOYER, J. H. (1956), "Pharmacology of Mecamylamine", *Am. J. M. Sc.*, 232: 129.
- FORD, R. V., MOYER, J. H., HANDLEY, C., and SPURR, C. L. (1957), "Chlorothiazide (Diuril), an Orally Effective Non-mercurial Diuretic Agent", *M. Rec. & Ann.*, 51: 376.
- FREIS, E. D., and WILSON, I. M. (1957), "Potentiating Effect of Chlorothiazide (Diuril) in Combination with Anti-hypertensive Agents", *M. Ann. District of Columbia*, 26: 468.
- FREIS, E. D., WANKO, A., WILSON, I. M., and PARISH, A. E. (1958), "Treatment of Essential Hypertension with Chlorothiazide (Diuril)", *J.A.M.A.*, 166: 137.
- KEMPNER, W. (1948), "Treatment of Hypertensive Vascular Disease with Rice Diet", *Am. J. Med.*, 4: 545.
- MARSHALL, R. J. (1958), "Chlorothiazide: A New Diuretic", *M. J. AUSTRALIA*, 2: 517.
- MEDICAL RESEARCH COUNCIL (1950), "The Rice Diet in the Treatment of Hypertension", *Lancet*, 2: 509.
- SCHREINER, G. E., and BLOOMER, H. A. (1957), "Effect of Chlorothiazide on the Oedema of Cirrhosis, Nephrosis, Congestive Heart Failure and Chronic Renal Insufficiency", *New England J. Med.*, 257: 1016.
- SMIRK, F. H., and ALSTAD, K. S. (1951), "Treatment of Arterial Hypertension by Penta- and Hexa-methonium Salts", *Brit. M. J.*, 1: 1217.
- TAPIA, F. A., DUNSTAN, H., SCHNECKLOTH, R. A., CORCORAN, A. C., and PAGE, I. H. (1957), "Enhanced Effectiveness of Ganglion-Blocking Agents in Hypertensive Patients During Administration of a Saluretic Agent (Chlorothiazide)", *Lancet*, 2: 831.

COLITIS IN PATIENTS TREATED WITH GANGLION-BLOCKING AGENTS.

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BOWEL DISTURBANCE in patients being treated with ganglion-blocking agents is well recognized: some degree of constipation is almost universal, and most of the patients require continued use of purgatives; occasional cases of paralytic ileus have also been reported (Bourne and Hosford, 1951; Hirson and Kelsall, 1951; Mackey and Shaw, 1951). However, it is not generally appreciated that the treatment may sometimes be complicated by severe diarrhoea due to an ulcerative lesion of the bowel. The following case histories are reported to draw attention to this possibility.

Reports of Cases.

CASE I.—The patient, a man aged 58 years, was admitted to hospital in December, 1952, severely ill, with left ventricular failure. He had suffered from cardiac dyspnoea for about 20 months, and in the two weeks prior to his admission to hospital was short of breath even when resting and had frequent attacks of paroxysmal dyspnoea. His blood pressure was 210/130 millimetres of mercury, and there was marked cardiac enlargement with a pattern of left ventricular enlargement in the electrocardiogram. The only other feature of note was moderate impairment of renal function, as indicated by routine tests performed prior to the patient's discharge from hospital (fasting blood urea, 28 milligrammes per 100 millilitres; urea clearance, 54% of average normal; maximum urinary urea concentration after ingestion of 15 grammes of urea, 1.8%). As judged from the appearance of the ocular fundi, the hypertension was still in the "benign" phase, the only abnormality being arteriosclerotic changes in the arterioles.

He was treated with hexamethonium bromide, at first by intravenous and later by subcutaneous injection, with marked relief of his symptoms, so that he was soon discharged from hospital and able to resume his work, treatment by injections of hexamethonium bromide being continued on an out-patient basis. In January, 1954, a change to treatment with oral pentolinium was made, and in January, 1955, oral reserpine was added to the previous treatment. After preliminary adjustments, the dosage was stabilized at oral pentolinium 180 milligrammes three times a day, and oral reserpine 0.25 milligramme three times a day. The blood pressure control and symptomatic effect were excellent and side effects minimal.

In June, 1956, he became ill suddenly and was admitted to hospital with a history of abdominal pain, vomiting and diarrhoea for two days. He was then very dehydrated and his abdomen was distended and tender, especially in the right iliac fossa; shifting dullness was present. His oral temperature was 99°F., and pulse rate was 88 per minute. Intravenous saline was administered to combat his dehydration, and a laparotomy was performed. At operation, free fluid was found in the peritoneal cavity and the small bowel was distended and inflamed, but no lesion amenable to surgical treatment was seen. The patient seemed at first to progress favourably, but two days after operation his abdominal distension increased rapidly and he died suddenly.

At necropsy, in addition to the cardio-vascular changes characteristic of severe hypertension, the most prominent finding was a large area of greenish-yellow necrotic mucosa extending from the ileo-caecal junction to approximately half-way to the hepatic flexure. The small bowel was congested, and two small argentaffin carcinomata (each about one centimetre in diameter) were present in the terminal part of the ileum.

The total time of treatment with ganglionic drugs was three and a half years, and of treatment with these drugs orally was two and a half years.

CASE II.—The patient, a woman aged 45 years, was admitted to hospital in July, 1953, with the complaint of migrainous headaches for five years, palpitations for three years and nervous tension for three years. Significant findings were a blood pressure of 260/140 millimetres of mercury; arteriosclerotic vessel changes, haemorrhages and soft exudates in the ocular fundi; no clinical cardiac enlargement but prominence of the left ventricle shown on fluoroscopy, and electrocardiographic changes of left ventricular enlargement; renal function tests gave essentially normal results. The patient was treated in turn with hexamethonium bromide by injection, pentolinium by injection and oral pentolinium

(commenced in October, 1954) and oral reserpine. Although there was symptomatic relief and some reduction in blood pressure, the control of the latter was unsatisfactory, and the patient was admitted to hospital in October, 1956, with a view to substitution of pentolinium by mecaminylamine. She was then receiving oral pentolinium 740 milligrammes per day (in divided doses of 240, 240 and 260 milligrammes) and oral reserpine 0.25 milligramme three times a day.

After her first dose of the latter drug she developed abdominal pain and diarrhoea, with frequent fluid stools containing copious fresh blood, and she became severely ill, with a distended tender abdomen and absent bowel sounds. Her oral temperature was not elevated. Laparotomy was performed three days after the onset of diarrhoea, and a distended small bowel and gangenous caecum were found. The caecum was exteriorized and a caecostomy performed. After a very stormy illness, the patient eventually made a good recovery and the caecostomy was closed. Since operation no more ganglion-blocking drugs have been given, and the blood pressure control has been fairly good with reserpine alone.

The total time of treatment with ganglion-blocking drugs was three and a quarter years, and of treatment with oral ganglion-blocking drugs was two years.

CASE III.—The patient, a woman aged 42 years, was admitted to hospital in February, 1951, with a history of attacks of shortness of breath for two years, increasing shortness of breath on exertion for one year, and swelling of the legs and orthopnoea for several months. She also complained of episodes of depression, increased sweating, ravenous appetite, rapid heart action and swelling of the abdomen. On her admission to hospital, the significant findings were: her blood pressure was 240/150 millimetres of mercury; there were marked cardiac enlargement, oedema of the legs, bilateral papilloedema, retinal haemorrhages and vessel changes; albuminuria was present, but renal function tests gave satisfactory results. The patient was treated with oral pentolinium and injections of mersalyl, and later by hexamethonium by injection and later still by pentolinium by injection, with a good symptomatic effect and eventually good blood pressure control. In November, 1954, a change was made to oral pentolinium (the dose after preliminary adjustments being 1100 milligrammes per day, in divided doses of 300, 400, 400 milligrammes), still with good blood pressure control and symptomatic relief, although the patient later developed mild congestive cardiac failure (treated with digitalis), a fever of undiscovered origin and pneumonia with pleurisy.

In March, 1957, she was admitted to hospital with a right-sided hemiparesis and slurring of speech, diagnosed as due to a cerebral thrombosis. She was making a good recovery when, six days after her admission to hospital, she developed severe diarrhoea and shock with low blood pressure, and her abdomen became distended and tender. Her oral pentolinium was stopped and intravenous saline given, with nor-adrenaline added in suitable concentration to maintain a satisfactory blood pressure. Unfortunately a further oral dose of pentolinium was given, and after this the patient's condition deteriorated, with a fall in her blood pressure and recurrence of abdominal distension. Laparotomy was performed, and it was noted that the bowel was congested and oedematous and, although there were irregular bowel movements, there was no propulsive peristalsis. Fluid and gas were aspirated from the small bowel and the abdomen was closed. Intravenous therapy and aspiration of the stomach were continued and the patient made a steady recovery. Although a salmonella organism was cultivated from the faeces on one occasion, it did not seem probable that this caused the patient's severe illness.

The total time of treatment with ganglion-blocking drugs was six years, and of treatment with oral pentolinium was two years and four months.

CASE IV.—The patient, a man aged 68 years, had suffered from an episode of congestive cardiac failure some two years prior to his admission to hospital in October, 1957, and since then had been short of breath on slight exertion; he had been worse in the past few weeks, when he also suffered from orthopnoea and oedema of the legs.

Significant findings were: a blood pressure of 240/125 millimetres of mercury; irregularity of the arterioles and scattered flame haemorrhages in the ocular fundi; cardiac enlargement with an apex beat seven inches from the midline and a triple rhythm; signs of congestive cardiac failure, with raised jugular venous pressure, crepitations at the bases of the lungs, enlargement of the liver and oedema of the legs; a blood urea level of 75 milligrammes per 100 millilitres, and slight albuminuria.

The patient received standard treatment for congestive cardiac failure, with rest in bed, low sodium diet, digoxin and diuretics. Three days after his admission to hospital,

treatment with mecamlamine was commenced, the drug being given every eight hours in a dose varying from five to 12.5 milligrammes. The blood pressure fell to a level varying between 135/80 millimetres of mercury and 170/90 millimetres of mercury, and the patient was improved symptomatically, with subsidence of the signs of congestive cardiac failure.

However, 10 days after commencing therapy with mecamlamine he developed severe diarrhoea, his abdomen became distended with faint bowel sounds, and the urinary output decreased. He was treated by aspiration of the stomach and intravenous fluid therapy, but his condition deteriorated; he became anuric and died a week after the onset of the diarrhoea. During his illness his oral temperature was never elevated above 99.6°F.

Necropsy revealed the usual changes of hypertension and congestive cardiac failure. The kidneys were small, each weighing about 120 grammes, and granular. The large bowel presented a most striking picture, the whole surface being hæmorrhagic, with numerous irregular sloughing ulcers throughout its length.

CASE V.—The patient, a woman aged 48 years, had suffered from severe headaches at night for seven to eight years and from mild exertional dyspnoea for two to three years. Her blood pressure was raised (200/115 millimetres of mercury) and the urine contained a trace of albumin, but there were no other clinical abnormalities. A radiographic examination showed her heart to be slightly enlarged, and an electrocardiogram showed the features of left ventricular enlargement. Her renal function was good. The patient was treated with oral mecamlamine 15 milligrammes at twelve-hourly intervals; this was continued for four months, with moderate reduction in the blood pressure and complete relief of headache. However, within a fortnight of commencing the treatment she began to suffer from diarrhoea, which eventually became so bad that it caused faecal incontinence and made her life a misery. The treatment with mecamlamine was stopped, and the diarrhoea subsided within two days. Her headaches recurred, but have been relieved by treatment with pentolinium by injection.

Comment.

The occurrence of several instances of acute enterocolitis in a series of patients treated over several years with ganglion-blocking drugs does not, of course, prove that this complication is a result of the treatment. However, there are certain features which lead to a strong suspicion that they are related: the only patients developing enteritis were those on oral therapy, in whom a high concentration of the drug in the bowel would be expected; no other cause for the symptoms could be demonstrated; the pathological findings (at necropsy in Case I and at operation in Case II) were atypical either of ulceration due to infective conditions (such as bacillary or amebic dysentery) or of the idiopathic type, being maximal in the region of the caecum; in Case III the symptoms subsided when treatment with oral pentolinium was stopped, but recurred when this drug was recommenced.

The mechanism of the symptoms is unknown. The fact that they have occurred only in patients having oral treatment suggests that they are due to a local action of the drug on the bowel, either by a direct irritative effect or by an action on the nerve plexuses in its wall. The observation at operation of the absence of normal propulsive peristalsis gives some support to the second suggestion.

It might be thought that these symptoms would be more likely with poorly absorbed substances such as pentolinium, which might reach the large bowel in large amounts, than with well-absorbed substances such as mecamlamine, which would presumably be removed from the lumen of the gastro-intestinal tract in the stomach or upper part of the small intestine. However, Cases IV and V suggest that this is not so. Intestinal complications from mecamlamine have been reported by other workers—ileus by Grant and Boyd (1957), and severe diarrhoea by Kitchen *et alii* (1957).

The occurrence of severe bowel complications should lead to caution in the use of ganglion-blocking agents, particularly by the oral route. Although it is now established that these drugs can improve life expectancy in patients with hypertension in the malignant phase and

can relieve severe symptoms (Smirk, 1954; Barnett 1956), it remains questionable whether they should be used in most cases of hypertension in the "benign" phase, when the dangers from treatment may well be as great as the dangers of the disease. Again, the possibility that they may cause not only constipation but also occasionally severe diarrhoea associated with ulceration of the bowel should be appreciated, so that, should this symptom occur, the drugs may be stopped promptly.

The development of bowel complications from the ganglion-blocking drugs has not been eliminated by the introduction of new compounds. Recently it has been demonstrated that the dose of ganglion-blocking agent for a given hypotensive effect can be substantially reduced by the concurrent use of a saluretic agent, chlorothiazide (Freis and Wilson, 1957; Tapia *et alii* 1957; Barnett and Marshall, 1958). It is hoped that the administration of this latter drug will permit the use of the ganglion-blocking drugs at a level which will minimize the occurrence of dangerous complications.

Summary.

Five cases of severe diarrhoea in patients receiving oral treatment with ganglion-blocking agents are reported. Two of the patients died. In three cases severe ulceration of the bowel was demonstrated (in two cases at necropsy, in one at operation).

It is suggested that colitis may be a complication of the treatment with ganglion-blocking drugs administered orally, and this factor should lead to caution in their use.

Acknowledgements.

My thanks are due to Dr. Eric Clarke for permission to publish Case IV, and to Dr. T. E. Lowe, Director of the Baker Medical Research Institute, for helpful criticism of this paper.

References.

- BARNETT, A. J. (1956), "Treatment of Severe Arterial Hypertension: Results from Long-Term Use of Methonium Compounds With and Without the Addition of Reserpine", *Australasian Ann. Med.*, 5: 724.
- BARNETT, A. J., and MARSHALL, R. M. (1958), "Treatment of Hypertension with a Combination of Chlorothiazide and Mecamlamine", *M. J. AUSTRALIA*, 2: 521.
- BOURNE, G., and HOSFORD, J. (1951), "Methonium Compounds in Hypertension", *Lancet*, 1: 527.
- FREIS, E. D., and WILSON, I. M. (1957), "Potentiating Effect of Chlorothiazide (Diuril) in Combination with Anti-hypertensive Agents", *M. Ann. District of Columbia*, 26: 468.
- GRANT, A. P., and BOYD, J. S. (1957), "Mecamlamine Ileus as a Surgical Emergency", *Lancet*, 1: 713.
- HIBSON, C., and KELSALL, A. R. (1951), "Methonium Compounds in Hypertension", *Lancet*, 1: 585.
- KITCHEN, A., LOWTHER, C., and TURNER, R. (1957), "Mecamlamine", *Lancet*, 2: 605.
- MACEY, W. A., and SHAW, G. B. (1951), "Paralytic Ileus After Hexamethonium", *Brit. M. J.*, 1: 1205.
- SMIRK, F. H. (1954), "Results of Methonium Treatment of Hypertensive Patients", *Brit. M. J.*, 1: 717.
- TAPIA, F. A., DUNSTAN, H., SCHNECKLOTH, R. A., CORCORAN, A. C., and PAGE, I. H. (1957), "Enhanced Effectiveness of Ganglion-Blocking Agents in Hypertensive Patients During Administration of a Saluretic Agent (Chlorothiazide)", *Lancet*, 2: 831.

THE ACUTE ABDOMEN.¹

By J. B. BRINKS,
Griffith.

THERE is a ladder up which all who aspire to the performance of major surgery must climb. The first rung of this ladder consists perhaps of such hazards as bleeding frænal arteries after circumcision, fibroadenoma of the breast which move like quicksilver when pursued, and sebaceous cysts which defy circumnavigation. This rung successfully climbed, the next is undoubtedly the "acute abdomen". For most this is a solitary climb, undertaken

¹British Medical Association, New South Wales Branch Prize Essay, 1957.

in the dark watches whilst one's seniors sleep. Woe betide him who has the temerity to wake them; his fate can be envied only by him who gets into trouble because he fails to wake them.

Of all the aspects of the "acute abdomen", both collective and individual, which might be made the subject of an essay such as this, I think that that of differential diagnosis has preeminence when the subject is considered from the practical standpoint of the man who has to do it. Between the Scylla of "wait and see" and the Charybdis of "look and see" there is a mean course based upon a rational consideration and a weighing up of possibilities in the light of signs and symptoms. Not only is it important to consider the various individual pathological conditions, which are by convention considered as facets of the acute abdomen, but also, and perhaps even more so, those extraabdominal conditions, which present on occasion in the guise of an abdominal catastrophe. Further, another and larger group of cases, which receive but scant mention in the text-books, but which cause so much worry and concern in practice must be considered, namely the veritable army of near hypochondriacs, whose symptoms are many, whose signs are few and who present an embarrassingly normal abdomen if one should be tempted to venture therein. That "common things occur commonly" is a truism especially applicable to the acute abdomen, where so often the most exotic pre-operative diagnosis is reduced to that of acute appendicitis at laparotomy. With this thought in mind I have compiled a list of the abdominal emergencies which I have treated between 1951 and 1956. This is appended to this paper and shows the conditions met with, in descending order of frequency. The list has, of necessity, a great deficiency which is impossible to remedy. It does not show those patients who were seen and sent home either straightway or after a period of observation.

All diagnostic enterprise is conducted by one of two methods—either the methodical or the intuitive. The former is that which one employs at the beginning of one's surgical career; a mental picture of the possibilities to be considered is made, and then by question and answer, examination and investigation, one eliminates the outsiders. Later, instinct—albeit in part synonymous with experience—plays a greater part, and the former processes tend to be unconsciously minimized in favour of the near spot diagnosis. This, I think, is a tendency which must be resisted, because it is undoubtedly productive of serious error, which could be eliminated by the methodical approach. Despite the most painstaking history and the most scrupulous and exhaustive examination and investigation, it must be confessed that there is a nucleus of cases in which one is very content to be able to decide simply whether or no it is an abdomen to be watched or opened regardless of precise diagnosis.

Acute Appendicitis.

Acute appendicitis constitutes the overwhelming majority in any series of acute abdominal emergencies—nearly two-thirds in this series. In a fair proportion the diagnosis is easily made. I have found especial difficulty in three groups, namely children, young women and the aged.

Acute Appendicitis in Children.

In childhood it is of imperative importance that no case be missed because the likelihood of peritonitis is so great; appendix abscess formation with subsequent resolution, as we know it in the adult, is a rarity in childhood. Abdominal pain is the predominant symptom. Should the pain have been insufficient to keep the child awake, or at least to have interfered with his sleep, the case is probably not one of acute appendicitis. Similarly, should it be stated that the child has recently eaten a good meal, the likelihood of acute appendicitis being found is small. Often the pain is said to have begun in the mid abdomen and moved to the right iliac fossa in the classical manner. Should this be so, I think the diagnosis is made. However, very often the first complaint

is of pain at the site of the appendix, which, though usually sited in the right iliac fossa, may, on occasion, be anywhere from the left iliac fossa via the left and right hypochondria to the pelvis. The history is short; children who are said to have had the pain for a week, unless in *extremis*, are not cases of appendicitis. In contrast with adults, in whom vomiting is a variable feature, in childhood it occurs in virtually every case, and follows the onset of pain. Constipation is common; diarrhoea is rare, but may occur together with the passage of mucus in the presence of a pelvic appendicitis, especially if of some duration. The general condition of a child with acute appendicitis deteriorates rapidly. Signs of dehydration appear within a few hours. The tongue is furred and the breath has a peculiar smell not entirely due to acetone.

Examination of the abdomen, especially in the youngest patients, is often unrewarding, owing to the natural reluctance of an ill child to submit to it. Voluntary guarding is common, and I believe that rebound tenderness is the only sign upon which one can rely. The best procedure in such a case is to admit the child to hospital, and return when he is asleep. The demonstration of localized tenderness and guarding in the relatively relaxed abdomen of the sleeping child is an invaluable manoeuvre. Rectal examination is a much over-rated procedure in children; often it frightens the child to such an extent as to preclude re-examination later. It should be reserved for those cases in which abdominal examination is equivocal, and symptoms suggestive of a pelvic site are present—dysuria or diarrhoea. In such a case the result of such an examination may be to feel a pelvic abscess, or a full bladder, or simply to note a generally "hot rectum".

The pulse rate is invariably raised, but, more important, it continues to rise even though the child is asleep, and I believe that a rise of ten points in a sleeping child in whom the diagnosis is in doubt may be accepted as a fair indication for re-examination, and possibly for operation. Generally speaking, if after the child's admission to hospital the pulse rate does not rise, it may be said that the case is not one of appendicitis.

In considering a diagnosis of appendicitis in childhood, the following conditions should be borne in mind, and excluded:

1. The first is non-specific mesenteric adenitis—the enlargement of mesenteric, especially ileal, glands, in response to infection elsewhere; in practice this means tonsillitis or pharyngitis. A history and signs of these conditions are usually forthcoming, and examination usually shows cervical-gland enlargement too. Abdominal signs are not as marked or localized as in acute appendicitis. The patient is not as ill, and it may be possible to feel the enlarged glands in the right iliac fossa of a thin child.

2. Constipation is a very potent cause of abdominal pain in childhood, and may be accompanied by a mild pyrexia. The loaded sigmoid is usually palpable, and both signs and symptoms are cured by a soap-and-water enema.

3. Chest infections are sometimes very difficult to distinguish from appendicitis. Referred pleuritic pain in the distribution of the lower six intercostal nerves frequently produces guarding and a complaint of tenderness in the abdomen. It is well worth counting the respiratory rate. Simple observation shows that the alae nasi are active, and that movement of the affected side of the chest is limited. Abdominal guarding is usually greater in the epigastrium than in the iliac fossa. It may be overcome by gentle pressure. An X-ray examination of the chest is usually a source of disappointment at this early stage.

4. Cases of infective hepatitis may be mistaken for appendicitis, especially if seen in artificial light. A history of some days off colour, pain mainly in the epigastrium, and the finding of bile in the urine may save the appendix for another day.

5. Right-sided urinary infections are rare in boys, but are seen from time to time in girls; pain in the renal angle, a relatively soft abdomen, frequency and dysuria, with a marked increase in urinary pus cells, help to differentiate this condition.

6. Ureteric colic due to calculi is rare nowadays in childhood, but may be accurately simulated when a mass of sulphonamide crystals is passed. They may be seen under the microscope.

7. Salmonella infections may cause difficulty in diagnosis, especially before the usual diarrhoea appears. Conversely, *Shigella sonnei* may be the chief bacterial inhabitant of an acutely inflamed appendix.

8. Primary peritonitis due to pneumococci or streptococci is often almost indistinguishable from severe appendicitis, and indeed laparotomy is usually performed with a provisional diagnosis of ruptured appendix. Herpes labialis, active *aë* nasi and marked toxæmia may hint at the true state of affairs.

9. Intussusception usually but not invariably occurs in a younger age group than appendicitis. Providing it is borne in mind, the distinction is simple. If not, an intussusception may be considered to be a mild case of appendicitis, as the inflamed peritoneal surface is enveloped in the intussusception.

It is generally stated that appendicitis is a rarity under two years of age. It is, but it does occur, and failure to consider it accounts for the high incidence of peritonitis found in these children on their admission to hospital.

Appendicitis in Girls and Young Women.

More normal appendices are removed in this group than in any other, especially under the guise of the so-called chronic appendix. Why this is so is difficult to say. It is undoubtedly true that, from time to time, rupture of an ovarian follicle is accompanied by the loss of a few millilitres of blood into the pelvis and right iliac fossa, and one is beguiled into performing a fruitless laparotomy. However, in the vast majority there is nothing to be seen, despite pre-operative complaints of vomiting and severe pain, albeit in retrospect one remembers that the abdomen was undoubtedly scaphoid, and the complaint of pain on examination too ready, and the tongue too clean. But nevertheless an inoffensive appendix is removed—"to be on the safe side".

One cannot help concluding that the principal aetiological factor is psychological, and as such does not deserve operative cure, successful though it is. Certain objective criteria must therefore be satisfied before such an abdomen is opened, regardless of subjective complaints of agonizing pain. These criteria are: a raised and rising pulse rate, coated tongue, localized release tenderness, and some slight abdominal distension. I think this latter a most important sign. In no circumstances does an "acute abdomen" lie behind a scaphoid abdominal wall; there is always slight meteorism. In the absence of these criteria, procrastination should be the treatment, combined, if considered necessary, with the patient's admission to hospital, a fluid diet and a half-hourly pulse chart. The obvious counter argument to this proposition is that a true acute appendicitis will be missed. I do not think that this is so, because a "true bill" will readily fulfil the criteria listed above.

Acute Appendicitis in the Aged.

The third class of patient in whom appendicitis deserves special mention is the aged. They present a problem the reverse of that discussed earlier in relation to young women. Often old people disregard the pain and vomiting for a long period, considering it to be a probably transient gastro-intestinal disturbance. Further, localizing powers seem to be faulty in old age, as in childhood, and the disease progresses rapidly to generalized peritonitis. Signs are in abeyance, and frequently a relatively soft abdominal wall overlies extensive peritonitis. As in childhood, the history is often fragmentary; a rising pulse

bellies a sparkling eye and dictates laparotomy before it is too late. A persistent "appendix abscess" is probably a carcinoma of the caecum.

Differential Diagnosis.

Acute appendicitis forms more than two thirds of all emergency operations, and therefore it is in the guise of appendicitis that many other conditions present, some of which have been mentioned earlier.

Alternative mimics of appendicitis include the following:

(i) A small duodenal perforation with a minimal leakage down the right paracolic gutter, and a resultant complaint of pain in the right iliac fossa; a careful history may suggest the diagnosis, but only time or laparotomy will prove it. (ii) Acute Meckel's diverticulitis; there were four in this series. It should always be looked for if the appendix is normal. (iii) Acute Crohn's disease; it is usually easily diagnosed in retrospect, but rarely beforehand, even if a thickened coil of ileum is palpable. The affected segment should never be resected, because in 50% of cases there is complete resolution. (iv) Cholecystitis, especially if the gall-bladder is perforated; it may be mistaken for a high appendix. Pain in the scapular region, together with a history of indigestion may suggest the true diagnosis. (v) Ectopic pregnancy and twisted or infected ovarian cyst; when one of these conditions is suspected, one of two manoeuvres may make the diagnosis. First the foot of the patient's bed is raised; if this produces pain in the shoulder, a ruptured ectopic pregnancy is suspected. Second, one should not hesitate to examine a doubtful patient under an anaesthetic. (vi) Benign solitary ulcer of the caecum; two cases of this condition were encountered within two weeks of one another. Macroscopically a wet blotting-paper like patch of green or blue caecum is found, which, providing one is aware of the existence of the condition, is easily dealt with by simple oversewing.

An ameboma looks and feels like a lymphosarcoma, but there is little glandular involvement. If it is inadvertently resected as was the one in this series, the patient is put on emetine therapy, quickly, to guard the suture line.

Rupture of the inferior epigastric artery occurs in elderly men. It occurs so rarely that unless one has personally "been caught" with such a case, one does not consider it. The onset of pain is sudden, and is followed by the gradual formation of a paramedian lump in the posterior part of the rectus sheath behind the muscle.

Perforated Peptic Ulcer.

Perforated peptic ulcer was the second most common emergency encountered in this series, accounting for over 10% of the total. It is of course the easiest of diagnoses, to make when the condition occurs, as it usually does, in its classical form, with instantaneous onset and agonizing pain. The temperature, pulse and respiration rates are often normal to begin with, but the board-like abdomen is characteristic.

Though usually occurring in adults, and in men more frequently than in women, it crops up from time to time in all age groups. I have seen a two-day-old child with a perforated gastric ulcer.

Variations of the classical form of presentation may give some difficulty in diagnosis. Often a patient with what can only be described as an exacerbation of a posterior duodenal ulcer is sent in to hospital with a provisional diagnosis of perforation. Relatively localized non-progressive tenderness, together with a rapid symptomatic response to alkalis, proves the diagnosis. A small duodenal perforation may leak only a small quantity of stomach contents, which may trickle down the paracolic gutter to the right iliac fossa, simulating appendicitis.

One patient presented with a grossly distended tympanitic abdomen of three days' duration, and the diagnosis was made without hesitation of a large bowel obstruction. The abdomen collapsed when the peritoneum was incised, and it was discovered that the distension had been due to intraperitoneal gas escaping through a minute

gastric perforation. There was a negligible quantity of free fluid present.

A perforation into the lesser sac is always presented as a difficult case in which to make a diagnosis and to decide on treatment. In practice this is not so. In any case, if there is any doubt about the efficacy of a high posterior sew-up, it is of comfort to remember that this is the one site where the nearness of adjacent structures will ensure the success of conservative management, with the early formation of adhesions.

One is taught to look carefully below the belt in examining the acute abdomen so as not to miss a strangulated hernia. It should be equally axiomatic to look above the costal margin and pay some little attention to the thorax and its contents. Laparotomy is no cure for a coronary thrombosis or spontaneous pneumothorax. An exact mimic of a perforated ulcer is an intrapleural perforated ulcer of the oesophagus. The onset of the pain is instantaneous, the abdomen is rigid, and the respirations are grunting. The distinguishing features are shock of a severe degree, far greater than that occurring in the early stages of a perforated peptic ulcer, where more often than not pulse rate and blood pressure are normal for a time, together with signs of collapse and pneumothorax, usually of the left chest.

Rarities in medicine usually occur in runs, and it is thus that three cases of dissecting aneurysm of the aorta may be seen in a relatively short space of time. The first is subjected to laparotomy and is rapidly closed. In the light of experience, a moment is spared in future to inquire further about the distribution of pain, and especially to feel the femoral pulses. An invariable and valuable confirmatory sign is the presence of heavy albuminuria. There is little one can do about a dissecting aneurysm, but one can at least avoid doing a laparotomy if the possibility is considered.

I believe that the above-mentioned conditions should receive pre-eminence when a diagnosis of perforation is debated, because without exception they are aggravated and in no way ameliorated by laparotomy. Of lesser importance is the differentiation between a perforated peptic ulcer and other abdominal emergencies.

Acute pancreatitis is commonly mistaken for a perforation and will continue to be so, despite the three generally accepted points of differentiation (persistent vomiting, pain in the back and a raised serum amylase level). The last mentioned is the most potent source of error, for it may be raised in a multiplicity of conditions, including perforated ulcer and cholecystitis. I think, therefore, that despite the generally accepted normal figure of 40 to 140 Somogyi units, no value of less than 800 Somogyi units may be accepted as diagnostic of pancreatitis.

Acute cholecystitis is invariably accompanied by inter-scapular pain, but that rare and little understood entity, biliary peritonitis, is usually diagnosed as a perforation, is suspected when clear bile is found at laparotomy, and is accepted as proven only when careful search has excluded the presence of a perforation.

The classic mimic of a perforated ulcer is the gastric crisis of tabes. I have been presented with two patients said to be suffering therefrom; both had advanced tabes, and both had perforated gastric ulcers. It would seem to be sound practice nowadays to treat all first attacks of "gastric crisis" by laparotomy.

Just as gastric crises receive excessive attention in the text-books, so does small-bowel obstruction with strangulation of a loop receive too little, in so far as the sometimes instantaneous nature of its onset is concerned. Frequently these patients develop their symptoms just as rapidly as a perforation, and in view of this are diagnosed as such. A moment's consideration of the nature of the pain and the lack of board-like rigidity makes the distinction easy.

A perforating carcinoma of the stomach can sometimes be distinguished from an ulcer on general appearance and history, but the distinction is academic from the point of view of treatment.

A note on treatment may not be out of place at this point. All patients should be operated upon, if even reasonably fit. Conservative treatment is too risky and worrying; the likelihood of a small high anterior gastric perforation becoming sealed off is small. Closure by invagination of attached live omentum into the perforation is the simplest method and avoids the embarrassment of stitches cutting out, as they often do when a "text-book" closure is attempted. Especially does this apply to a perforated carcinoma. Further, in the case with a scarred duodenum the lumen is not further occluded. Immediate gastrectomy for selected patients obtained temporary vogue, but in most surgeons' experience the convalescence proved so stormy that reversion to the established, albeit time-consuming, procedure of closure and subsequent gastrectomy seems wise.

Intestinal Obstruction.

Hernia.

The commonest cause of intestinal obstruction is a strangulated or incarcerated hernia. There were 72 in this series, constituting some 5% of all emergencies. Femoral and inguinal herniae occurred with about equal frequency. The diagnosis in the majority presents no difficulty. The tiny femoral hernia in the obese patient remains a hazard. Similarly, a Richter's hernia in relation to the femoral canal is not uncommon, and may be especially difficult to diagnose with certainty, necrosis of part of the bowel circumference occurring with the formation of a "wind abscess" in the absence of any of the signs of obstruction.

Umbilical herniae sometimes give anxiety in that they commonly occur in obese women, and have many loculi, only one of which contains the strangulated loop. Alternatively, an intraabdominal source of obstruction may cause the bowel to distend and enter a pre-existing umbilical hernia, or indeed any other hernial sac available, so that the patient is submitted initially with the diagnosis of incarcerated hernia.

Herniae into the intraabdominal peritoneal cul-de-sac are more often diagnosed than found at operation. A pain down the inside of the leg in a patient with intestinal obstruction suggests an obturator hernia; more often than not the obstruction is found to be due to some quite mundane cause entirely unconnected with the obturator foramen.

The Mass in the Colon.

Mass in the colon is the second commonest cause of intestinal obstruction. I use the term "mass in the colon" advisedly, because that is what is found at laparotomy in these cases, and it is often impossible, in the absence of overt metastases, to distinguish a carcinoma from an acute or chronic abscess due to diverticulitis. The diagnosis then waits upon subsequent resection of the mass.

In the majority of cases the mass arises from the sigmoid colon. Especially does this apply to diverticulitis. Carcinomata presenting with colonic obstructions are more common in the sigmoid. The next most common site is the transverse colon. Occasionally, a carcinoma of the caecum will invade and/or occlude the ileo-caecal valve, producing a small-bowel obstruction.

Sometimes a history suggestive of long-standing colonic disease is obtainable, but often this is not so. The diagnosis is usually easy on clinical grounds, when the condition is well established with constipation, tympanitic abdomen and vomiting. However, in cases of lesser severity, e.g. subacute obstruction, in an obese patient, the difficulties are many.

Among those conditions which may simulate an obstruction of this type, special mention should be made of two. First, retroperitoneal disturbances, notably pancreatitis and renal colic. These are commonly accompanied by meteorism. Meteorism and pain with vomiting implies obstruction, and unless a thought is spared for the retroperitoneal region a needless laparotomy may be performed. Secondly, not infrequently patients with chronic urinary retention are sent into hospital with a diagnosis of intestinal obstruction. Vomiting, consti-

pation, furred tongue and distended abdomen form part of the picture of uræmia. This, together with a distended hypogastrium, especially if, as sometimes happens, the bladder is asymmetrical and predominantly on the right or the left side, may give the impression of obstruction. Differentiation is of course simple, providing the possibility is considered.

Special investigations are by and large a disappointment as an aid to the diagnosis of the acute abdomen. There is one notable exception—the straight X-ray picture in the diagnosis of intestinal obstruction. Properly interpreted, with full awareness of its limitations, it is of incomparable value. Not only does it confirm or deny the presence of obstruction, but in addition it indicates its site. Enhanced hastrations delineate the colon, and valvula conniventes the small bowel. One is taught that fluid levels are the diagnostic feature for which to look. I have come to the conclusion that they are but icing upon the cake, and barely justify the extra inconvenience necessitated in propping the patient up or rolling him on his side to look for them. A film taken with the patient lying supine and showing to any marked degree either of the two features mentioned above is sufficient.

Three possible snags should be borne in mind. (i) If gas is increased throughout the bowel, but is present in the rectum also, an operation should not be performed without first giving the case further thought, and without giving the patient an enema and taking another film. Meteorism due to a non-obstructive cause, as mentioned above, is likely if there is gas in the rectum on the second film. (ii) The caecum balloons easily. Frequently the ileo-caecal valve remains competent for a long time, permitting no colonic reflux into the small bowel. The caecum becomes grossly distended and may overlay the whole of the plain film and thus be missed through sheer size. (iii) If one erect film is made and the case is one of small-bowel obstruction, the resultant distended loops will be seen in the epigastric region. The temptation to make an epigastric laparotomy incision should be resisted; the obstruction is as likely to be due to a pelvic cause, but the gas-filled loops tend to float upwards.

Nowadays, more and more is being said and written in favour of delaying operation in cases of this sort, pending the restitution of fluid and electrolyte balances. This can readily be overdone, and, further, what is sheer procrastination can be excused as therapeutic vigour. Two points should be considered: as long as the obstruction remains, fluid will continue to be lost into the bowel and the peritoneal cavity; secondly, in the presence of a competent ileo-caecal valve the possibility of rupture of the caecal wall subsequent upon its devascularization as a result of distension is a very real one, converting simple obstruction into faecal peritonitis.

Carcinoma, but more especially diverticulitis, may present as generalized peritonitis due to rupture of a pericolic abscess, but often there is some indication of a concomitant obstruction. Frequently a history of disturbed bowel rhythm together with the passage of blood and mucus may be obtained. Signs of a more or less generalized peritonitis accompany a tender mass in the pelvis or left iliac fossa. Carcinoma of the colon may present as an intussusception; more especially does this apply to the ascending colon. The intussusception may be acute or subacute. In the latter case it presents with occasional and intermittent attacks of pain.

Adhesions and Bands.

Adhesions and bands are the scapegoat of all that proves inexplicable in the surgery of the abdomen: the cause of kinks and twists in the bowel, the burying of gall-bladders, the retroversion of uteri, the binding down of ovaries, pains in the back, front and sides—a very suitable successor to that time-worn and outmoded pair, dropped kidneys and disordered action of the heart—a convenient and indisputable diagnosis, and moreover a socially acceptable one, for which the patient is grateful. Like chronic interstitial mastitis or grey hairs, adhesions are often present, but they rarely give trouble. Most tough

fibrous bands which one finds connecting visceral to parietal peritoneum, or loop to loop, have their origin in earlier operations, and are presumably the result of the effect of time and environment on the typical filmy post-operative adhesions. Why some of these should persist, a tendency varying not only from patient to patient but also within a specific abdomen, is open to conjecture. Adhesions are also found in patients who have obviously had a tuberculous mesenteric adenitis. Others must perforce be labelled congenital remnants.

Adhesions or bands were the fourth most common cause of intestinal obstruction in this series. More significant, obstruction due to this cause was attended by the highest proportion of gut resections, namely 40%. The difficulty lies not so much in diagnosis as in instituting treatment quickly enough. Characteristically, the pain comes on quite suddenly, like a perforation. Rapidly it gains a superadded colic, which a perforation never has. The abdomen is relatively soft apart from the site of the distended and trapped loop, where there is local tenderness.

Intussusception.

This constituted the third most common cause of intestinal obstruction in this series—49 cases. In its classical form, occurring in a healthy male child, in whom abdominal colic accompanies screaming, vomiting and the passage of blood and mucus, the diagnosis is simple. Like most things in medicine, the path is not always clear, and the following departures should be borne in mind. In something like one third of cases, there is no vomiting until a late stage; similarly, in another third there is no "red currant jelly" when the patient is first seen; in a number of patients no mass is palpable, either because the child is too fretful or because the swelling is hidden behind the liver and costal margin; Finally, in a number of patients, especially older children, the condition is subacute, with recurring intussusception and only partial intestinal obstruction.

In doubtful cases, a barium enema X-ray examination will usually resolve doubts, but it should be remembered that although most intussusceptions of childhood originate at the ileo-caecal junction, some do not. The series under discussion includes two cases in which the intussusception began at a Meckel's diverticulum and one in which it originated in the mid-ileum, with a lymphosarcoma at its apex. These, at least in their initial stages, would not have been demonstrable by barium enema X-ray examination. A further factor to be considered before embarking on barium enema X-ray examination is that in the event of an intussusception being discovered and of it proving irreducible with barium, so that operative reduction is necessary, I think that the inevitable residuum of barium left militates against easy post-operative bowel action and the passage of flatus. A third objection to the routine use of barium enemata applies to the ill child with an advanced intussusception; inevitably valuable time is consumed and simultaneously shock is increased.

A practical difficulty, as apart from the foregoing, arises in that the necessary team and apparatus essential to the investigation are not always available at short notice. In this event, it seems to me that the correct procedure is as follows: if the diagnosis is in real doubt, the child should be admitted to hospital, a half-hourly pulse chart maintained and the abdomen re-examined when the child is asleep.

Should one think the diagnosis probable, the safest plan is to examine the abdomen under an anaesthetic, proceeding to laparotomy if necessary. Providing relaxation is good, I have found this procedure infallible. It should be remembered that the mass may be felt anywhere along the course of the colon, and also, as stated earlier, be hidden behind the prominent liver of children. Unless one is aware of the fact that a child's liver is conspicuous, it may be mistaken for the intussusception. Also, in an abdomen which is well relaxed, an isolated faecal mass feels very like an intussusception. The *signe de Dance* is of little help.

The intussusception which presents at the anus often proves easy to reduce, owing to the minimal oedema of the intussusceptum, which has allowed it to travel so freely and so far.

A note on therapy: one should not persist with a difficult reduction. Fifteen minutes by the clock are allowed after the abdomen is opened, and should reduction not have succeeded or be succeeding, the operator should proceed straightway to perform a hemicolectomy. Forcible attempts with resultant resection in a soiled field in a shocked child account for the high mortality and the myth that resection is accompanied by a 50% death rate, and therefore reduction should be accomplished at all costs, etc. In the present series, hemicolectomy was performed in eight out of 49 cases, without death.

The differential diagnosis is not extensive. The most common problem is to differentiate between an early intussusception and simple intestinal colic. The regime described will do this. Causes of intestinal bleeding in childhood must be considered. Bleeding from a rectal polypus is painless. Dysentery due to salmonella organisms is commonly accompanied by blood in the stools. Intestinal hæmorrhage is a concomitant of Henoch's purpura. Two points help to make the distinction: first, the absence of abdominal signs; and second, the presence of joint symptoms, ecchymoses, and, more important, albumin and casts in the urine. On occasion, an intussusception may complicate Henoch's purpura.

Most intussusceptions occur between the ages of six and fifteen months of age, with the major incidence between six and nine months; nevertheless the condition is met in all age groups. After childhood it occurs most often in old age. In this group intussusceptions are usually discovered at laparotomy for obstruction, and most are surmounted by a carcinoma or more rarely by a benign tumour.

Neonatal Intestinal Obstruction.

There is no department of surgery of which most of us have a greater fear, when we are first introduced to it, than that of children. How much more does this apply to a howling infant, or to a neonate. To be told that a child is vomiting, and to accept it as anything other than an overt manifestation of normality, requires a mental somersault. To consider it dispassionately and objectively, as one would with an adult, requires practice (especially as it may form a basic symptom of almost 99% of the disease complexes of infant life). Next, one tentatively examines the abdomen and is disappointed to find that other than being very very small, and very nearly hidden by an enormous napkin, it is to all intents and purposes normal. It would be nice at this juncture to lean back and ask the patient a few irrelevant questions, whilst rapidly thinking up the next move. The game is and has been lost from the start. The tactics were wrong. One should not go near the patient until a pædiatrist has been consulted; for if he can once be persuaded to give an opinion, it may be accepted that it is his bounden duty to exclude all extra-abdominal causes of vomiting, including the triad—ear, chest and meninges. Further, no pædiatrist is worth his salt unless he has considered infective gastro-intestinal disorders and diseases of the kidneys in conjunction with general metabolic upsets.

The obvious approach, therefore, is to obtain an assurance on all the foregoing points, and only then to consider a surgical cause, which a pædiatrist usually does extremely well too. It should also be remembered that an infant's wound heals well, an infant's mesentery has no fat, an infant rarely has post-operative retention, femoral thrombosis or collapsed lungs, an infant never argues the fee. With these thoughts in mind, and extra-abdominal sources of vomiting having been excluded, the possibility of true intestinal obstruction may be debated. This is invariably due to a congenital abnormality. Obstruction may be partial or complete, and it is in the former group that diagnosis is most difficult.

In duodenal atresia, the obstruction is usually, though not always, distal to the ampulla. Biliary vomiting and

failure to gain weight are the symptoms; but if, as is common, the obstruction is only partial, the bowels are opened, flatus and meconium being passed, and Farber's test for epithelial squames gives a positive result. Also, abdominal distension is minimal. However, a straight X-ray picture of the abdomen shows a greatly distended stomach, and the presence of a little barium or lipiodol proves delay in emptying.

Neonatal volvulus, due to malrotation of the midgut and resulting in its suspension by a pedicle consisting of the superior mesenteric vessels, produces high-level obstruction at the third part of the duodenum, but gangrene in the suspended loop is rare.

Simple atresia of the small bowel, or obstruction due to meconium ileus in fibrocystic disease of the pancreas, are productive of technical difficulties in treatment, rather than intellectual difficulty in diagnosis.

Abdominal Emergencies Due to Trauma.

The most frequent intraabdominal injury resulting from trauma in this series was rupture of the spleen, of which there were 10 cases. All the spleens were macroscopically and microscopically devoid of associated disease.

The causative injuries were diverse. In six cases the trauma was severe, resulting from road accidents, and was associated with other injuries. In two cases the injuries were minimal. A seventy-year-old woman stumbled whilst walking around her dining-room table, bumping her left side against the table, but not falling to the ground. She carried on with her work for half an hour before suspecting that she had suffered anything other than a severe bruise. A second woman, aged 63 years, stumbled and bumped her left side whilst coming down stairs.

The presenting clinical features are those of peritonitis; that is, tenderness, rigidity and guarding, spreading from the left hypochondrium, combined with those of hæmorrhage—pallor, tachycardia and hypotension. Should this symptom complex be present when the patient is first seen, undelayed laparotomy is obviously indicated. However, it is not uncommon that the picture is incomplete when the patient is first seen, and much the same attitude should be adopted as that required in dealing with suspected intracranial bleeding after head injury. Just as intracranial hæmorrhage is suspected if there is headache and vomiting after trauma, so should splenic hæmorrhage be suspected if there is a history of a blow in the region of the left lower ribs combined with tenderness in this region.

Associated injuries may make the diagnosis more difficult. Fractured ribs commonly accompany a ruptured spleen; it is perhaps surprising that in some patients, especially children, there is no fracture, when one considers the "rib-locked" bay in which the spleen lodges. Oblique X-ray pictures taken with greater penetration than standard chest films to demonstrate these fractures are helpful. Simultaneous chest films and perhaps diaphragmatic screening are of aid in a doubtful case.

Injury to the left kidney occurred in two cases. In both there was hæmaturia, and a perirenal hæmatoma was apparent at operation for removal of the spleen. In both instances the kidney was judged insufficiently badly damaged to justify interference. Injury to a kidney in a child may produce intraperitoneal bleeding, but in an adult it rarely does so, owing to the increased perirenal fat.

Associated head injuries form the most unhappy companions for cases of suspected internal bleeding. A confused belligerent person, suffering from cerebral irritation, makes difficult material for examination, and it is in such a case that one realizes how much dependence one normally places on pulse and blood pressure readings. Therapy is also difficult: Should one give morphine? Should one give a transfusion? Should one give an anaesthetic?

One such case is included in this series. On the day of the patient's admission to hospital a ruptured spleen was removed, the following day an extradural clot was evacuated from the patient's skull, and on the third day an extensive contralateral subdural haematoma was found at post mortem.

For the majority of cases in which the diagnosis is certain, immediate transfusion and laparotomy through a high left rectus-splitting incision is indicated. Blood is run in straightway, but not through a leg vein in a collapsed patient. The cephalic vein in the delto-pectoral groove is a good choice. The most helpful adjunct to easy surgery is a large stomach tube passed by the anaesthetist after intubation. This is of the greatest value, allowing all gas and fluid to be expelled from the stomach, and permitting a perfect view of the spleen.

If the diagnosis is not obvious, and as delayed haemorrhage, even up to weeks later, is well recognized, an X-ray picture of the chest and lower ribs as suggested earlier should be taken, and the patient put to bed with the foot of the bed elevated; this may result in a complaint of shoulder tip pain.

Ballance's sign is often quoted. I believe that should one ever find it, then one has been neglectful in not operating sooner.

Traumatic Rupture of the Bowel.

Traumatic rupture of the bowel in the absence of a penetrating wound of the abdominal wall is rare. It usually results from an unanticipated injury when the abdominal muscles are relaxed, and the injury may therefore be comparatively slight, and there is no swelling or bruising of the abdominal wall itself. The injury usually involves the duodenum, the duodeno-jejunal flexure, the terminal ileum or the bowel at the site of an external hernia; that is, the fixed points. Diagnosis of an intra-abdominal catastrophe is usually easy, but occasionally frank perforation may be delayed. In one case a young man was struck in the right iliac fossa, and apart from some local tenderness suggestive of superficial bruising, remained asymptomatic for three days, until his caecum perforated. Occasionally the rectum or colon may be perforated by accidental or purposeful trans-anal injury. In this instance the possibility of an extraperitoneal perforation is, of course, high.

Occasionally, perforation may occur during the course of barium enema or sigmoidoscope examinations, especially when the patient is suffering from ulcerative colitis. This series includes one case of each of these happenings. In both cases the diagnosis was obvious at once, and in the former it was apparent on the fluorescent screen.

Acute Pancreatitis.

The cardinal features of an attack of acute pancreatitis are said to be epigastric pain radiating through to the middle of the back, protracted and repeated vomiting, shock of more rapid onset and of greater severity than that accompanying other "acute abdomens". The diagnostic test is the serum amylase estimation. Despite these so-called characteristic features, it must be confessed that not infrequently one is forced to resort to laparotomy to confirm or deny one's suspicions. To place too much reliance on the serum amylase estimation is an error, for it may be raised in a host of conditions, including acute cholecystitis and perforated peptic ulcer, albeit to a modest level. Nevertheless, I believe that no figure of less than eight hundred Somogyi units should permit one to diagnose acute pancreatitis with confidence and institute an unalterable programme of conservatism.

In a doubtful case a policy of wait and see may be orthodox but unrewarding, because so often deterioration continues, and one is in much the same quandary as regards diagnosis. If, therefore, after consideration of signs, symptoms, and serum amylase levels, the diagnosis remains equivocal, early laparotomy should be resorted to, to obviate the possibility of a remediable condition being missed.

Diseases of the Biliary Tract.

Two conditions of the biliary tract present for diagnosis in the guise of surgical emergencies. The first is acute cholecystitis, the second biliary colic. The dividing line is thin, pathologically and clinically, for an attack of acute cholecystitis is often ushered in by biliary colic impacting a stone in Hartmann's pouch or the cystic duct.

Acute cholecystitis presents as an acute febrile illness associated with vomiting, tenderness over the gall bladder, and a positive Murphy's sign. Murphy's sign should always be looked for in the left side too, to provide a basis for comparison; surprisingly often tenderness is complained of, thus negating the observation on the right side. Of great diagnostic significance is the complaint of pain referred to the interscapular region. Occasionally, and unfortunately too rarely, the gall-bladder is palpable; it should not be mistaken for a palpable Riedel's lobe of the liver, and vice versa. The sufferer is so frequently in the classical gall-bladder category physically, being obese and multiparous with a history of flatulence, that especial watch has to be kept for the condition in the asthenic male, and even in childhood, one case of which, occurring in a boy of twelve, is included in this series.

Gall-stone colic may result from efforts of the biliary tree to expel a stone from anywhere within its length, be it in the gall-bladder, cystic or common duct. As already pointed out, it may be the precursor of an attack of obstructive cholecystitis or of obstructive jaundice. True gall-stone colic provides little difficulty in diagnosis. The pain is agonizing, it comes and goes, and the patient does not know where to put himself whilst he has the pain, in contradistinction to the patient with peritonitis, who lies absolutely still, each movement producing pain. The pain has a typical "gall-bladder" distribution, as already described; it is accompanied by retching and vomiting, and the vomit may or may not contain bile. Later, obstruction may result in fever and jaundice due to obstructive cholecystitis or in fever due to cholecystitis, depending upon the site of the stone.

Conclusion.

In conclusion, I would like to reiterate two points which I have already made.

First, that this is not and was not intended to be a comprehensive survey, but rather an essay recording personal impressions. It is thus, therefore, that many conditions are omitted, and others accorded far greater mention than they would merit in an orthodox text-book.

Secondly, I repeat the plea for a methodical, painstaking, "history, examination and investigation" approach to diagnosis, rather than the instinctive spot diagnosis of which we are all guilty from time to time, and to which ill-placed and even unnecessary scars bear witness.

Appendix.

Summary of Cases.

Appendicectomy	950
Appendix abscess, drainage only	8
Perforated gastric and duodenal ulcer	163
Incarcerated hernia (femoral 27, inguinal 33, umbilical 10, obturator 1, para-duodenal 1)	72
Intussusception (reducible 43, resected 8)	51
Laparotomy only (including inoperable neoplasms)	43
Peritonitis and/or obstruction due to "mass in colon"	55
Obstruction due to adhesions (freeing 10, freeing and resection 13)	23
Acute obstructive cholecystitis (cholecystostomy 6, cholecystectomy 14)	20
Ovarian cyst (twisted 13, ruptured 3, infected 2)	18
Trauma (ruptured jejunum and/or ileum 7, ruptured spleen 10, ruptured kidney 1, ruptured liver 1)	19
Mesenteric thrombosis, with and without resection	13
Ruptured tubo-ovarian abscess	11
Ruptured ectopic pregnancy	11
Laparotomy for acute pancreatitis	9
Acute tuberculous peritonitis	6
Primary peritonitis	6
Perforation of the small bowel due to a foreign body	3
Perforation of the colon due to a foreign body	1

Obstruction due to carcinoma of the ascending colon and caecum	4
Acute Meckel's diverticulitis	2
Solitary ulcer of the caecum	2
Idiopathic intraperitoneal haemorrhage	2
Primary biliary peritonitis	2
Meconium ileus	2
Duodenal atresia	2
Anal atresia	2
Exomphalos	2
Jejunal atresia	2
Haemorrhage into pancreatic cyst	1
Gall-stone ileus	1
Intestinal obstruction due to cabbage	1
Rupture of inferior epigastric artery	1
Amoeboma of ascending colon	1

WEDGE RESECTION OF THE GREAT TOENAIL.

By NEIL JOHNSON, M.S., F.R.C.S., F.R.A.C.S.,
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THE failure of the simplest of operative procedures is as disturbing to the patient as it is humiliating to the surgeon. Experience in a teaching hospital suggests that such an unfavourable outcome is only too frequently the sequel to the operation of wedge resection for an ingrowing toenail. This operation is often followed by recurrent episodes of sepsis and, on occasions, even by irregular regrowth of the supposedly excised section of nail. It is our belief that the main reason for such an unhappy result is a failure on the part of the surgeon to appreciate accurately the precise anatomy of the nail bed. Since neither of the standard text books of anatomy used in this medical school (Cunningham, 1943; Gray, 1954) gives an adequate description of the anatomy of the region, it seemed to us not inappropriate to describe this area in some detail.

The Anatomy of the Nail Bed.

Whilst the general arrangement of the tissues of the nail bed is well known, the detailed shape and disposition of the proximal end of the structure is not so widely appreciated. The proximal border is concave in outline, with the concavity directed towards the base of the phalanx. It is applied around the tubercle on the dorsal aspect of the phalanx, which bears the insertion of the extensor hallucis longus tendon. The extremities of this proximal border extend further laterally than do the margins of the nail itself, and form two horn-like processes which pass upwards for a variable distance on either side of the extensor tendon insertion (Figure I). On occasion, they may project three to four millimetres beyond the lateral edge of the nail.

It is of interest to note that if a nail is avulsed (*in toto*) and examined it is found that it does not have quite the same complexity of shape as has its tissue of origin. Unlike the concave proximal border of the nail bed, its proximal extremity is often quite straight (Figure II), meeting the edges of the nail almost at right angles, and it is this simple square-cut outline of the nail which

suggests to the unwary that the nail bed is of similar shape. Moreover, just as the nail becomes progressively attenuated as it is traced proximally, so the nail bed tapers and ends in a thin wedge composed of epithelial cells, the cells of origin of the nail. This thinning out of the nail bed is particularly well marked in the lateral horns of that structure.

In part because of the delicate structure of these horns of the nail bed and in part because of the failure of the surgeon to appreciate their possible extent, they are all too often left behind when the operation of wedge resection

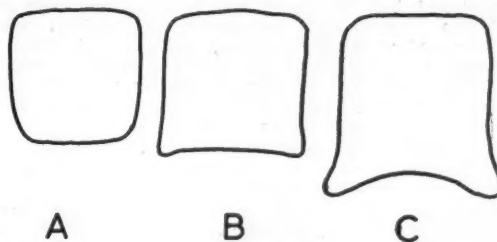


FIGURE II.

Diagram showing the relative shapes of the visible nail (A), the avulsed nail (B) and the nail bed (C). The square-cut outline of avulsed nail suggests that the nail bed is a similar shape.

of the great toenail is performed. In this event, the epithelial cells will continue to proliferate and to form keratin, and their growth will be evident at a variable time post-operatively by the development of a tender nodule at the proximal extremity of the operation scar. These nodules predispose to episodes of recurrent sepsis, and are the main cause of failure in the eyes of the patient. Many surgeons, when performing this operation, employ a curette in the hope thereby of removing the nail bed, but the inefficiency of this manoeuvre is indicated by post-operative recurrences after its use.

Bearing in mind these details of the anatomy of the nail bed, we have come to stress the importance of certain points in the technique of the operation, and these will now be discussed in some detail.

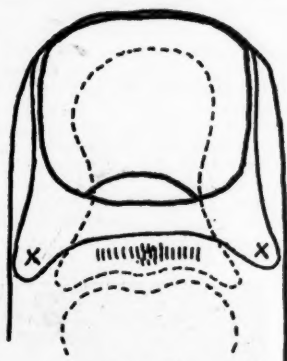


FIGURE I.

Diagram showing the arrangement of structures in the great toe. The lateral horns of the nail bed, slightly exaggerated in size for the purpose of emphasis, are marked with the letter X. Note the way in which the posterior margin of the nail bed is applied around the insertion of the extensor tendon.

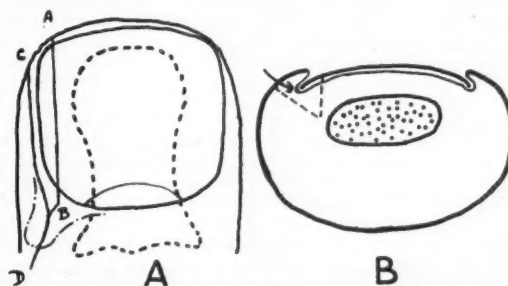


FIGURE III.

A: Diagram showing the placing of incisions on the great toe when the operation of wedge resection is performed. The initial incision (AB) is made parallel to the edge of the nail, and the second incision (CD) is curved in toward AB in the manner illustrated. B: A coronal section through the terminal phalanx shows the plane of dissection beneath each of these incisions.

The Operation.

The operation may be performed under either general or local anaesthesia. However, the use of a phalangeal tourniquet applied to the base of the toe is an essential, since an adequate operation depends on accurate visualization of the structure concerned. An incision through the nail is made on the affected side in the long axis of the great toe and two to four millimetres from the edge of the nail (AB in Figure III). This incision extends from the

edge of the cuticle proximally to approximately five millimetres beyond the distal extremity of the nail. It is deepened through both the nail and the nail bed until the dense fibrous tissue overlying the phalanx is reached. A second incision (as in Figure III) is then made through the skin beside the nail, and at a similar distance from the edge of the nail. Taking origin distally at the limit of the initial incision, this second incision should extend at least one centimetre beyond the visible nail. It is important to appreciate that failure to extend the exposure far enough in a proximal direction will result in an inadequate display of the lateral horn of the nail bed. This second incision is carried down to the loose subcutaneous fat and, as it approaches the proximal end of the nail, swings inwards towards the initial incision, so that only a narrow strip of skin is left between them. A third short cut, three to four millimetres in length, joins the proximal end of the initial incision to the side of the second cut, as shown in Figure III.

After these initial steps have been carried out, the edge of the nail bed in its distal part is displayed by a dissection through the subcutaneous fat under the second incision. This edge is identified and is then carefully followed proximally in a bloodless field, and it will be found that as this is done a small skin flap must, of necessity, be fashioned to the side of the nail. Under this flap the edge of the nail bed is carefully traced proximally until the end of the lateral horn is reached. The lateral horn can then be dissected out *in toto* under vision, this step being facilitated by the elevation of the strip of nail and nail bed from the underlying phalanx. A slight prolongation of the incision through the nail will then free the strip of nail to be removed, and a refashioned nail bed with a straight lateral edge will remain. The operation is concluded by the suture of the lateral skin flap to the edge of the nail by two or three stitches inserted through the nail itself. There is no difficulty in performing this operation on both sides of the toenail.

The essential point in the operation is accurate visualization and excision of the lateral horn of the nail bed and, by using the technique detailed above, embarrassing recurrences can be avoided entirely. Most texts dealing with the subject of "ingrowing toenail" describe the operation of total resection of the nail bed, together with partial amputation of the distal phalanx for severe and recurrent cases, but experience shows that this procedure is never necessary if adequate care is taken with the initial wedge incision. Even when dealing with recurrent cases, in which the scarring of previous operation and episodes of recurrent sepsis cause considerable distortion of the anatomical landmarks, it is possible by careful dissection to remove the lateral horns of the nail bed completely and thus avoid total excision of the nail. In recurrent cases such as this the interphalangeal joint may be inadvertently opened, but provided adequate care is taken with the aseptic preparation this occurrence is not followed by suppurative arthritis.

Summary.

1. The poor results of the operation of wedge resection of the toenail are due to the surgeon leaving remnants of the nail bed *in situ*.
2. The failure to appreciate the anatomy of the proximal extremity of the nail bed is responsible for this technical error.
3. It is pointed out that the nail bed has a pair of attenuated lateral horns and that these are the parts of the nail bed most frequently left behind.
4. The special points of an operative technique designed to remove the whole of the lateral horn of the nail bed are described.

References.

- CUNNINGHAM, D. J. (1943), "Textbook of Anatomy", 8th Edition, edited by Brash, J. C., and Jamieson, E. B., Oxford Medical Publications, London: 1168.
- GRAY, H. (1954), "Anatomy", 31st Edition, edited by Johnston, T. B., and Whillis, J., Longmans, London: 1272.

A MODIFICATION OF SANDIFORD'S APPARATUS FOR PÆDIATRIC ANÆSTHESIA.

By I. R. McDONALD, M.F.A.R.A.C.S.,
Toowoomba.

THIS apparatus was described by Sandiford, of Portsmouth, United Kingdom, in 1953. My reason for drawing further attention to it is that it has been very hard to obtain, so slight modifications have been made to it so that it can be produced locally. In principle it is a combined to-and-fro absorption set and T piece with mask and endotracheal fittings. The figures show the component parts and the set in use. The apparatus is designed to



FIGURE I.

give anaesthesia with quiet spontaneous respiration and minimal respiratory impedance, using the T piece, or positive pressure-controlled respiration, using the absorption cannister. The change from one set to the other is accomplished by clamping the free end of the T piece. The cannister is of stainless steel and contains eight ounces of soda lime. The dead space is one cubic centimetre. The set is used with the cannister in the horizontal position (Figure I), so that injury is not added to insult



FIGURE II.

by soda lime being poured into the airway. The cannister is robust and will not be injured by routine handling or sterilization (Figure II). The dead space of the small endotracheal connexion is half a cubic centimetre and that of the larger is 1.5 cubic centimetres. The mask contains 20 cubic centimetres and is therefore not ideal, but the only one available; this volume may be reduced by judicious insertion of sponge rubber.

This apparatus may be used on children of any size, but it is mainly for the neonate and for patients with chest

conditions that it is most useful. Once the patient has been intubated, the dead space of the set is comparable with that of the patient and seems reasonable when related to the tidal volume of the neonate, which is usually between 10 and 20 cubic centimetres. Spontaneous respiration is therefore quiet and apnoea easily induced and maintained. As neonates have a high respiratory rate and respiration is largely diaphragmatic, the stationary abdomen obtainable with controlled respiration is usually much appreciated by the surgeon.

With semi-closed absorption technique, moisture and heat are retained, though the flow rates employed give a certain amount of control in this direction. With controlled respiration, the metabolic activity of the infant patient is reduced to about one-quarter, so on balance the



FIGURE III.

patient tends to cool slightly; and, as far as the writer is aware, hyperthermia has never been reported during anaesthesia when controlled respiration has been employed. For these reasons, T-piece technique is employed during spontaneous respiration as a method of choice, and semi-closed technique during controlled respiration.

Controlled respiration can be effected during T-piece technique, employing "finger tip" method; that is, by rhythmically occluding the free limb of the T piece. This

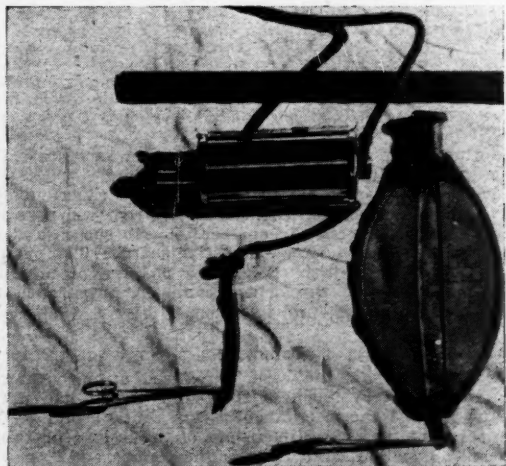


FIGURE IV.

appears satisfactory as a short-term policy and enables one to dispense with the cannister, which may be in the way in operations around the head and neck. However, unless high flows are used, inspiration must be prolonged, and this will elevate the venous pressure in fit patients or depress the circulation in the ill; for this reason, bag-squeezing is preferred for controlled respiration. It should be borne in mind that the feel of the small bag is different, and a manometer may with advantage be attached to the T-piece limb during positive pressure ventilation, for

surprisingly high pressures may be employed by the unwary.

The apparatus may also be of use in the management of intermittent positive-pressure respiration for poliomyelitis or tetanus when conventional flutter-valves cannot be successfully employed because of their relatively large dead space. It can most easily be used with a Blease "Pulmoflator" with an anaesthetic head.

In this connexion, the case reported by Lawes and Harries (1956) and the subsequent correspondence may be of interest.

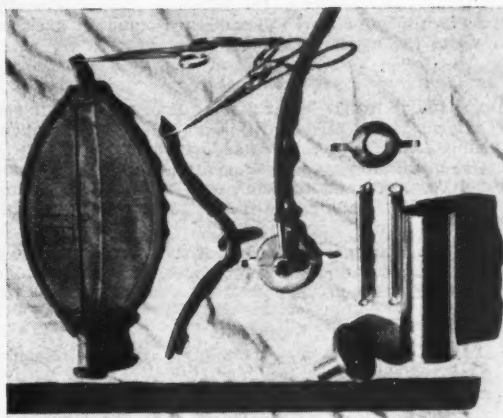


FIGURE V.

Acknowledgements.

I am much indebted to Dr. H. B. Sandiford for his permission to adapt his apparatus and to publish this article; to Messrs. Vettiger and Vidler, of Neil Street, Toowoomba, for their patience and skill in making the apparatus; and to Mr. Graham Woodward for the photographs.

References.

- SANDIFORD, H. B. C. (1953), "Anaesthetic Apparatus for Infants", *Anaesthesia*, 8:122.
LAWES, W. E., and HARRIES, J. R. (1956), "Intermittent Positive-Pressure Respiration", *Lancet*, 1:783.
SANDIFORD, H. B. C., and McDONALD, I. (1956), "Intermittent Positive-Pressure Respiration", *Lancet*, 1:1014.

THE PREPARATION OF SOLUTIONS FOR THE TRANSAMINASE TEST.

By H. F. HOLDEN¹ AND SARA WEIDEN,¹

From the Walter and Eliza Hall Institute of Medical Research and the Royal Melbourne Hospital, Victoria.

THOSE who for clinical purposes determine serum glutaminic-oxalacetic transaminase with the simplified method of Reitman and Frankel (1957) may find the following way of preparing small amounts of suitable solutions useful as regards economy, simplicity and definition of composition. The purchase abroad of costly proprietary reagents is thus avoided.

Buffer Solution.

Into a 250 millilitre standard flask transfer 1.775 grammes of dry disodium hydrophosphate and add 24.5 millilitres of normal sodium hydroxide. Dissolve and make up to the mark with water. Keep cold. This quantity is enough for two lots each of 100 millilitres of Solution I.

¹ Working with the aid of a grant from the National Health and Medical Research Council of Australia.

Solution I.

Into a 100 millilitre standard flask transfer with the buffer solution 1.330 grammes of d,l.aspartic acid and 30.0 milligrammes of α -ketoglutaric acid. This amount of aspartic acid is sufficient. Add buffer solution to a total of about 95 millilitres and rotate the flask until the acids are dissolved. Make up to the mark with buffer solution.

Alternatively, transfer with 60 to 70 millilitres of buffer solution 1.330 grammes of d,l.aspartic acid and 30.0 milligrammes of α -ketoglutaric acid into a 100 millilitre beaker. Weigh the beaker and contents to the nearest 0.05 gramme. Warm gently until the acids are dissolved. Cool and add water until the weight is the same as before warming. Transfer with buffer to a 100 millilitre standard flask and make up to the mark with buffer solution.

Solution II.

Into a 100 millilitre conical flask transfer with normal hydrochloric acid 20.0 milligrammes 2,4-dinitrophenyl hydrazine. Add normal hydrochloric acid to a total of about 80 millilitres and warm gently until the hydrazine is dissolved. Cool and transfer with normal hydrochloric acid to a 100 millilitre standard flask. Make up to the mark with normal hydrochloric acid.

In the transaminase determination a "blank" should always be included and the colorimeter set with the blank always at the same value.

Reference.

REITMAN, S., and FRANKEL, S. (1957), "A Colorimetric Method for the Determination of Serum Glutamic Oxalacetic and Glutamic Pyruvic Transaminases", *Am. J. Clin. Path.*, 28: 56.

Reports of Cases.**MOLLUSCUM CONTAGIOSUM AND MONILIASIS
(COMBINED INFECTION).**

By J. M. O'DONNELL, M.B., Ch.M.,
Perth.

As I have never seen or read a report of a similar condition, I believe that I should record a case of combined molluscum contagiosum and *Candida albicans* infection.

Clinical Record.

The patient, a fifteen-year-old Dutch boy, was referred to me on January 6, 1958. The lad had been resident in Australia for a few years. No other members of the household had any skin trouble. He gave the history of having had "boils" on his left buttock for six months. During that period he had been treated with penicillin injections, various antibiotics and local antiseptics without benefit. Instead, new lesions had developed. He felt quite well and the lesions were not causing a great deal of discomfort. He had no cough or digestive tract symptoms. The lesions remained "fixed" and none had healed. The majority had gradually increased in size.

On examination, he had a string of lesions on the side of the left buttock, seven in all (Figure 1). Starting from the top, the first, second, fifth, sixth and seventh were of furuncular appearance. They had central crusts which had some discharge coming from round the edges. The largest lesion (5) was about two centimetres in diameter and raised about one centimetre from the skin surface. The last to develop (7) was about half that size. Lesions 3 and 4 were cystic; each had a thick vascularized non-umbilicated roof. These were about 0.3 centimetre in diameter.

Considering the history and fixed nature of the lesions, one automatically dismissed furunculosis vulgaris as the diagnosis and thought in terms of fungus and other diseases such as molluscum contagiosum. The patient was

sent for bacteriological investigations before any active treatment was undertaken. X-ray therapy was applied to the lesions on January 6. The bacteriological investigations of the contents of lesion 3, one of the unbroken cystic lesions, revealed the following. Smears contained leucocytes, red cells, fungal hyphae and ascospores. Culture gave no bacterial growth on the usual media used for culture of pyogenic organisms. On corn-meal agar a pure culture of *C. albicans* was grown.

The patient was seen again on January 13, when no appreciable change in the lesions was noted apart from the one which had been opened. That one was fairly well collapsed. Further X-ray therapy was applied, and in view of the pathological findings a lotion of phenyl mercuric nitrate was ordered for dabbing the whole area three times a day, after which "Mycostatin" ointment was to be rubbed in. Oral "Mycostatin" was also ordered.

On February 5 the patient was seen again; to my great surprise and satisfaction all the lesions except one of the cystic ones had cleared, leaving only red marks such as one would see at the sites of recent furuncles. The

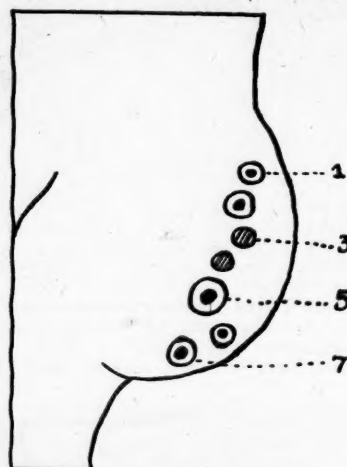


FIGURE 1.

Position of the seven lesions.

remaining lesion (3) had contracted and was represented by a small nodule with a pultaceous plug. This was removed and the small cavity painted with a caustic agent. Microscopic examination of the material removed revealed typical molluscum contagiosum bodies. No spores and no mycelium were found after exhaustive search. The patient looked perfectly healthy; there was no sign of monilial infection at any of the orifices and on appearance no reason to suspect systemic infection.

Comment.

When I first saw the case, I realized at once that it "reminded me very much of something that I had never seen before". I thought of molluscum contagiosum as the diagnosis, but the giant dimensions of the lesions made me doubtful. I had in mind to open the lesions and evacuate their contents, but thought that it would be better first of all to have bacteriological investigations made before disturbing them. The pathologist's report of mycelium and spores in the contents of the bullous lesion examined and the pure culture of *C. albicans* with total absence of pyogenic organisms added to my confusion.

Whether it was the X-ray therapy or the local and oral "Mycostatin" that caused the rapid resolution of the lesions, I am not prepared to state. It could have been the combination of both, no doubt, but I believe that the rapid disappearance of the large lesions was probably brought about by the "Mycostatin". X-ray therapy alone would have taken much longer to cure a condition that

had been present for six months or more. Perhaps they just "blew themselves out". Possibly there may have been a symbiosis between the *C. albicans* and the virus of the molluscum contagiosum which might account for the exuberant dimensions of several of the lesions. Maybe there is someone else who has seen a similar condition.

I regret that I was unable to obtain photographs of this condition as I hoped, because of the rapid clearance of the lesions.

Acknowledgements.

I would like to thank Dr. H. Hoffman for referring such an interesting case and Dr. S. N. Michaels for the pathological investigations.

Reviews.

Tuberculosis in Animals and Man: A Study in Comparative Pathology. By John Francis, D.Sc., M.R.C.V.S.; 1952. London: Cassell and Company, Limited. 9½" x 7", pp. 376, with 40 plates and 60 tables. Price: £5 5s. (English).

THE experimental or clinical approach to tuberculosis by medical, veterinary or science graduates tends to be coloured by their specialized educational discipline. Consequently, the importance of the comparative approach may not be fully appreciated by some, even after years of experience in the field. Undoubtedly, many of the problems encountered by the specialized worker will find a solution in the over-all host-disease pattern. To give only one example, the correlation between allergy, caseation and bacillary numbers in the lesions of different species becomes clear only when the reaction of all susceptible species is considered.

In this excellent and readable book, Professor Francis has incorporated a wealth of information concerning the host-parasite relationships of the tubercle bacillus, available only after years of careful analysis of the very extensive literature in many languages. From this, he has drawn his own conclusions, based on wide personal research in the field. Naturally enough, the work shows a bias towards his own major interest, the animal host, but there is adequate comparison with the human host for workers interested primarily in that field.

Inevitably there are experimental results cited and conclusions drawn, especially in those sections relating to allergy, that will not pass unchallenged, and one or two significant publications have not been taken into consideration in reaching the conclusions. This, however, fails to detract significantly from the undoubted over-all value of the work, which meets a long-felt need for readily available data on tuberculosis. This work, together with "The Pathogenesis of Tuberculosis" (A. R. Rich, Blackwell), merits a prominent place in the library of all who are interested in tuberculosis, whether from the medical or veterinary viewpoint, at the clinical, research or diagnostic levels. It is considered to be a "must" for beginners.

The Infantile Cerebral Palsies. By Elrene Collis, W. R. F. Collis, William Dunham, L. T. Hilliard and David Lawson, with a foreword by Sir Francis Walshe; 1956. London: William Heinemann (Medical Books), Limited. 8½" x 5½", pp. 112. Price: 15s.

THIS monograph is produced by a group who constitute "The Little Committee", formed one hundred years after the English surgeon, W. J. Little, published descriptions of cerebral motor disorders and drew attention to the aetiological aspects of anoxia and trauma at birth. It describes four of the more frequently occurring and one of the less frequently occurring clinical pictures of the infantile cerebral palsies and states the basis of diagnosis for each. The possibility of the concomitant defects of sight, hearing, mental deficiency and epilepsy is mentioned. A sample case is given of each form of cerebral palsy described. In this, the assessment at the time the patient is first seen is stated along with the advice given to the parents in the form of a scheme of management. Then follows one assessment of the child some years later. This time varies between two and a half years in the case of infantile hemiplegia to seven years in the case of the type described as generalized spasticity. Unfortunately, for those concerned with treatment and management nothing is given concerning the child's interim achievements or about interim advice. Each example reads like a success story without stating how the success is attained.

The outstanding aspects of the book are the stress laid on the fundamentals of treatment of the child as a whole, the general management of the average young affected child, the value of early diagnosis and early treatment in the probable prevention of possible deformities, and the importance of the never-ending task of a cooperative mother in the treatment of the child.

The defects of this otherwise interesting and informative publication are the number of different clinical pictures omitted, the condemnation in what should be a scientific presentation of some forms of treatment without description and critical examination, and the omission of progressive treatment and management.

The Physiology of Learning. By W. Ritchie Russell, C.B.E., M.D., M.A., D.Sc., F.R.C.P.; 1957. Edinburgh: The Royal College of Physicians. 8½" x 5", pp. 28. Price not stated.

IN this Morison Lecture, sponsored by the Royal College of Physicians in Edinburgh, the author's contention is this: In the newborn baby primitive sensations from body orifices and viscera are of immense importance in developing the motor responses. At first the hypothalamus acts as the centre, but gradually higher levels in the brain take up actions which are built upon a pattern already determined by the hypothalamus. A bad start by a neurotic or capricious mother can do lasting damage. It is a pity that the author weakens his case by exaggerated claims. It must be, he states, a frightening thought to a conscientious mother that she "holds the key to her child's future mental strength or weakness". The personal reaction factor exerted by the mother towards her baby is described as "alarming powers". There is little scientific support, he states, for the view that a gifted child has inherited talents; it is the proper correlation of feeling and action inculcated by the mother in early infancy which counts. So the supremacy of Britain's greatest man of science really arises from Mrs. Newton's calm and systematic dealing with meals and nappies in nursing her baby Isaac!

Cunningham's Manual of Practical Anatomy: Volume III. Head and Neck, Brain. Revised by James Couper Braash, M.C., M.D., D.Sc., LL.D., F.R.C.S. (Ed.), F.R.S.E.; Twelfth Edition; 1958. London, New York, Toronto: Oxford University Press. 7½" x 5", pp. 532, with 231 illustrations. Price: 46s. 6d.

THE first volume of this, the twelfth, edition of Cunningham's "Manual of Practical Anatomy" was reviewed in this Journal on March 8, 1958. It was said then that it was always a pleasure to see a new edition of an old friend, and the statement is still true. Now, however, the pleasure is somewhat tempered by the fact that Professor James Braash, who has revised so many editions of this excellent book, is dead, and no longer will his skilful hand guide the publishers. This is a matter of great regret, for it is felt that much of the popularity of Cunningham's "Manual" is due to Braash, who, since 1935, has been associated with its publication.

Apart from the change of terminology, and this involves only minor alterations, there are no spectacular changes in this volume. Some of the X-ray plates have been changed, with improvement in clarity, and a few of the figures modified. The order of dissection has been altered in this edition, since so few departments now place the body in the lithotomy position at the commencement. One result of this has been to separate the study of the face into superficial and deep dissections, now done at different times. This lack of continuity is a pity, but after all individual schools can work out their own order of dissection. This edition can only enhance the reputation of this notable book.

The Strategy of Chemotherapy. Eighth Symposium of the Society for General Microbiology held at the Royal Institution, London, April, 1958. Cambridge: Published for the Society for General Microbiology at the University Press. 9½" x 5½", pp. 170, with many illustrations. Price: 35s. (English).

THIS is the report of a symposium held by the Society for General Microbiology on "The Strategy of Chemotherapy" in London in April, 1958. Nineteen specialists from Great Britain, America and Australia presented 16 papers on a wide range of subjects which could be classed as having something to do with chemotherapy. Each contributor wrote his article without a detailed knowledge of what others would write, so there are different interpretations in different papers of the same data. This does not in any way detract from the value of the interpretations. Each contributor was asked not only to summarize the present position of knowledge in his particular field, but also to use his imagination freely in suggesting new modes of attack.

The first paper, by D. D. Woods and R. G. Tucker, on "The Relation of Strategy to Tactics: Some General Biochemical Principles", gives an excellent review of the whole field. This is followed by articles on antibiotics, inhibition of bacterial cell wall synthesis, drugs which act on different aspects of cells such as inhibition of energy production, anti-metabolites and inhibition of protein synthesis in cells, with papers by R. Knox on "The Chemotherapy of Bacterial Infections", R. J. W. Byrde and G. C. Ainsworth on "The Chemotherapy of Fungal Diseases", L. G. Goodwin on "The Chemotherapy of Protozoal Infection", and R. A. Neal on "Factors Affecting the Chemotherapy of Amoebiasis". The articles are not easy to read, and most demand a good knowledge of organic chemistry and of biochemistry, but the whole book is full of information and is very stimulating. There are enough ideas for new approaches in research to keep investigators busy for many years. The book is one essentially for specialists, but anyone with a good biological training would find much to interest and instruct him by browsing through the volume.

Medical Writing: The Technique and the Art. By Morris Fishbein, M.D.; Third Edition; 1957. New York: Toronto, London: The Blakiston Division, McGraw-Hill Book Company, Incorporated. 9" x 6", pp. 272, with 36 illustrations. Price: \$7.00.

FIRST published twenty years ago, this book is now a classic in its field. Morris Fishbein was for many years editor of *The Journal of the American Medical Association* and knows at first hand the detailed requirements of medical writing. He also has a vigorous and fluent pen and a pleasing style. With the experience gained from the preparation and launching of two editions of his work on "Medical Writing", he has produced a third edition full of wisdom and useful information. Every phase of the preparation and publication of a medical paper is dealt with. An occasional personal opinion appears, the spelling of some words follows the American usage, and certain suggested procedures relate particularly to the publications of the American Medical Association; nevertheless, most of the book can be heartily endorsed. It is recommended to all who prepare papers for medical journals and to all who do medical editorial work. A copy should be in every medical library. The price is unattractively high.

Practical Use of the Office Laboratory and X-Ray: Including the Electrocardiograph. By Paul Williamson, M.D.; 1957. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 10" x 6 1/2", pp. 323, with many illustrations. Price: £5 18s. 3d.

THE principal merit of this book is the idea which it proposes, with considerable enthusiasm, that the general practitioner should set up his own laboratory. In principle this is highly commendable. In practice it will appeal to a limited number, particularly those of an independent turn of mind, and also those in country and isolated practices who perhaps have more time available and less opportunity for help from the established laboratories.

The estimation of hemoglobin concentration and blood sedimentation rate, urinary analysis and the examination of stool for occult blood should, of course, be part of every doctor's routine examination. The author urges a much more ambitious programme, involving the use of photoelectric colorimeter, microscope, incubator and bacteriological equipment. Chapters on electrocardiography and radiology are also included.

For each procedure the author discusses methods, sources of error, indications and interpretation. For all biochemical procedures, however, the reader is referred to the instruction manual of the colorimeter. The tests are very numerous, and some of them, particularly the bacteriological tests, are too difficult for any except the most enthusiastic of amateurs. In many instances the problems are over-simplified.

For those interested in the idea the book will serve as a useful beginning. To really make the idea work it will probably be necessary to refer to more standard works on laboratory methods.

Homosexuality, Transvestism and Change of Sex. By Eugene de Savitsch, M.D.; 1958. London: William Heinemann (Medical Books), Limited. 7" x 4 1/2", pp. 128, with six illustrations. Price: 12s. 6d. (English).

In this book the author reviews briefly the physical aspects of hermaphroditism and androgyny, as well as the psychology of the homosexual, who is persecuted if not prosecuted, often merely on suspicion, particularly in the U.S.A., where security officials tend to regard the Government structure as "seriously endangered by the presence of

even a single homosexual in its midst". The author refers to several celebrated transvestites, including Pope John VIII, also known as Pope Joan, who held her high office with distinction during the ninth century, until, so the story goes, she died in childbirth in the Church of St. Clement, Rome.

The greater part of the book is devoted to "change of sex" operations on physically normal but mentally warped individuals. In some of the males, in addition to castration and amputation of the penis, an artificial vagina has been created by transplanting the rectum. The result in several instances has been "an end to mental anguish and unparalleled internal conflict". The wisdom of discussing operations of this type and for this purpose in a book written primarily for the clergy, schoolteachers and social workers is questionable, to say the least. The book closes with an appendix on legal aspects in Switzerland, where the "change of sex" operations in the cases described were performed. Readers will look in vain for guidance in the handling of sexual immaturities and deviations, particularly in adolescents.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"The Physical Treatment of Varicose Ulcers: A Practical Manual for the Physiotherapist and Nurse", by R. Rowden Foote, F.I.C.S., M.R.C.S., L.R.C.P., D.R.C.O.G.; 1958. Edinburgh and London: E. and S. Livingstone, Limited. 7 1/2" x 4 1/2", pp. 135, with 86 illustrations. Price: 15s. (English).

The author is surgeon-in-charge of the Varicose Vein Clinic at Harrow Hospital.

"The Kidney: An Outline of Normal and Abnormal Structure and Function", by H. E. de Wardener, M.B.E., M.D., F.R.C.P.; 1958. London: J. and A. Churchill, Limited. 9 1/2" x 5 1/2", pp. 348, with 74 illustrations. Price: 45s. (English).

Intended primarily for students.

"Annual Epidemiological and Vital Statistics: 1955"; 1958. Geneva: World Health Organization. 11" x 8 1/2", pp. 672. Price: £3.

The World Health Organization's annual comprehensive volume.

"Fractures and Dislocations", by George Perkins, M.C., M.Ch., F.R.C.S.; 1958. London: The Athlone Press. 9 1/2" x 6", pp. 372, with 225 illustrations. Price: 57s. 6d. (English).

The author states that the main purpose of this book is to ensure that patients are not harmed by treatment.

"Excreta Disposal for Rural Areas and Small Communities", by Edmund G. Wagner and J. N. Lanotx; 1958. Geneva: World Health Organization. 9 1/2" x 6", pp. 187, with illustrations. Price: 25s.

Deals with practical aspects of the question.

"A Symposium on Non-Toxic Hypertension in Pregnancy", edited by Norman F. Morris, M.D., M.B., B.S., M.R.C.O.G., and J. C. McClure Browne, B.Sc., M.B., B.S., F.R.C.S., F.R.C.O.G.; 1958. London: J. and A. Churchill, Limited. 8 1/2" x 5 1/2", pp. 256, with 78 illustrations. Price: 35s. (English).

The record of a symposium held at Hammersmith Hospital in July, 1957.

"An Introduction to Surgery", edited by David H. Patey, M.S., F.R.C.S.; 1958. London: Lloyd-Luke (Medical Books), Limited. 7 1/2" x 4 1/2", pp. 238, with 54 illustrations. Price: 17s. 6d. (English).

"An Introduction to Surgery", edited by David H. Patey, M.S., F.R.C.S.; 1958. London: Lloyd-Luke (Medical Books), Limited. 7 1/2" x 4 1/2", pp. 238, with 54 illustrations. Students' edition. Price: 9s. 6d. (English).

An introductory book for students. The standard library edition and the cheaper students' edition are identical apart from the binding, which is of the "paper-back" variety for the students' edition.

The Medical Journal of Australia

SATURDAY, OCTOBER 18, 1958.

RADIATION: THE IMPORTANCE OF PERSPECTIVE.

A BEWILDERING AMOUNT has been said and written in the last few years about ionizing radiation and its hazards throughout the world. One sometimes wonders if the number of radioactive particles in the atmosphere may not be exceeded by the number of words that they have evoked; and we may well ponder which is the worse—the radiation from many sources to which mankind is exposed or the barrage of conflicting propaganda which accompanies it. Certain it is that many people have become wearied by the words and blasé about the subject—a state just as unfortunate as the opposite extreme of hysteria. As a result the popular articles and comments, especially the titbits in the less conservative sections of the Press, grow more and more florid, and the hopes of keeping the question in perspective appear to become more remote. However, two points at least have to be kept in mind. The first is that this is a highly technical subject, by no means fully understood even by those who know most about it; it must yet, in its essential aspects and in their implications, be of great practical interest and importance to many people with little or no scientific training. The second point is that the subject has acquired a considerable emotional content, which it is probably not possible to remove. Both these facts complicate the handling of the subject, but the only wise course appears to be to accept them as inevitable and to make the most of the situation. If the effort is made to provide authentic and balanced information for those who seek it, it may well be that the emotional element can in its turn be used to motivate constructive action on the part of civilized communities.

For those who are seeking reliable information a number of major reports are available, in addition to papers on various aspects of the subject which have been published in this and other journals. The whole matter was given a good airing at the Australasian Medical Congress (B.M.A.) earlier this year,¹ and two of the papers then read were published in full in the issue of September 6, 1958; one by H. A. S. van den Brenk dealt with the radiation hazard as it affects medical practice, and the other by Gordon C. Smith covered radiation hazards in industry. We have also published in full the brief but informative report submitted to the Prime Minister in July, 1958, by the National Radiation Advisory Committee.² It is understood that a special committee of the National Health and Medical Research Council is preparing a report and other material that should be of particular value to the practising medical profession; and the Federal Council of the British Medical Association in Australia decided at its recent meeting, which is reported elsewhere in this issue, to seek the assistance of the Director-General of Army Medical Services in the preparation of a practical

document for the guidance of members of the Association. Perhaps still the best report available is that issued in 1956 by the Medical Research Council in Great Britain under the title "The Hazards to Man of Nuclear and Allied Radiations", an engagingly honest document which combines readiness to admit ignorance or limited knowledge with a sincere effort to give practical counsel where possible. Of particular importance and topical interest, of course, is the report of the United Nations Scientific Committee on the Effects of Atomic Radiation, published in August of this year; useful summaries of it are to be found in *The Lancet* of August 16 and in the *British Medical Journal* of August 23. It is interesting to note, as *The Lancet* points out, that the United Nations document confirms many of the findings of the Medical Research Council report, but still fails to decide the vexed question of whether or not there is a threshold of radiation below which no effect occurs; until this point is clarified some of the most important practical issues must remain the subject of, at best, speculation. In its general conclusions the United Nations committee says what everyone is presumably agreed upon—that all steps designed to minimize irradiation of human populations will act to the benefit of human health. It includes in these steps the avoidance of unnecessary exposure resulting from medical, industrial and other procedures on the one hand and the cessation of contamination of the environment by explosions of nuclear weapons on the other; prudently it adds: "The Committee is aware that considerations involving effective control of all these sources of radiation involve national and international decisions which lie outside the scope of its work."

What shall we say then as we face this mass of reports and opinions? One thing is certain, and that is that there is a great deal not yet understood. On the other hand, it seems clear that we know enough to devise some rules-of-thumb and a rough philosophy. The comments of Dr. Louis M. Orr in an address to the twelfth General Assembly of The World Medical Association (quoted elsewhere in this issue in a statement received from the World Medical Association) are much to the point:

In the medical profession it is known that radiation is an effective treatment for certain diseases and a necessary accompaniment of important diagnostic procedures. It cannot be discontinued, nor should it be indicted indiscriminately. It is necessary to evaluate potential dangers against possible benefits.

In general the maintenance of a balance here is essentially a medical responsibility. The medical profession must not allow its patients to be deprived of a very real good for the sake of undefined evils that may never in fact eventuate. As R. S. Landauer³ has put it, "where the severity of the disease requires radiation, the immediate positive benefits far outweigh possible future harmful effects. An aching tooth right now is more important to me than an infinitesimally remote possibility of leukaemia 40 years hence (if I live that long)". At the same time it behoves us to understand as far as we can these powerful agents that are in our hands and to avoid and discourage their unnecessary use. On the question of the fall-out from nuclear tests our rights to comment as a profession cease when we have stated the potential and actual dangers. The continuance or otherwise of these tests is something to be decided, in part at least, on other

¹ M. J. AUSTRALIA, 1958, 1: 828 (June 14) and 893 (June 28).

² M. J. AUSTRALIA, 1958, 2: 398 (September 20).

³ Arch. Dermat., 1957, 76: 699 (December).

grounds; with these grounds, as doctors, we are not concerned, whatever we may think as citizens. Perhaps we shall manage to keep the whole matter in perspective if we ponder the quiet realistic words of the Medical Research Council report:

The future development of civilization is bound up with the exploitation of nuclear energy. Its use, like that of other sources of energy, entails risk, but the risk is controllable and, within limits, can be accepted.

Current Comment.

TERMINOLOGY OF MEASUREMENTS OF VENTILATORY CAPACITY.

Words have a distinctly greater importance than most of their users realize. This importance stems not merely from difficulties of communication when they are carelessly or wrongly used, but from the fact that, in the main, the individual user has to do his thinking with them. What this may mean is daily illustrated by the tortuous pronouncements of politicians and the pompous effusions of "officialese"; of the former at least it may be said that they have an acute awareness of the emotional content of words, whatever the literal meaning. The demand for new words in the modern era has been enormous. In the exact sciences, new words have caused little confusion, because the disciplines themselves demand precise definition. In medicine, busy doctors, preoccupied with important problems of life and death, have used new words and old words with joyous and irresponsible abandon; a detailed study of the effects of this disastrous policy, if such it may be called, would be both revealing and rewarding. All this is somewhat irrelevant to the report on the terminology of ventilatory capacity measurements, prepared by B. Gandevia and P. Hughes-Jones,¹ for the Thoracic Society of Great Britain, but it is stimulated by their opening quotation to the effect that precision of language is not merely a hobby of the purist but a scientific necessity. By so much have we fallen short of our obligations in this regard that we have recently found it desirable to cloak the more obvious of our sins behind the term "medical jargon"—a nice phrase, redolent of the secret mysteries and obscure technicalities of a medieval treatise on alchemy, but signifying for the most part laziness or ineptitude.

The report referred to reflects the views of several meetings of British clinical respiratory physiologists, who have agreed to use the nomenclature set out. The recommended terms are carefully defined, and the reasons for their adoption are given in each case. There is also a section devoted to a consideration of rejected terms, which is useful in answering objections to some term which has been adopted. Those working in this field will recall that J. R. Pappenheimer² effected valuable standardization of certain respiratory measurements in 1950; the present report is complementary to this. The chief recommendations, which include abbreviations, may be briefly summarized.

The term "maximum breathing capacity" (MBC) is reserved for the concept of the maximum amount of air which the subject can shift in one minute. This amount is significantly influenced by the conditions of the test and is sometimes not achieved on voluntary hyperventilation. For these reasons in particular, the test by which this is commonly measured (voluntary hyperventilation over a period of time) is given the name of the maximum voluntary ventilation test (MVV). The importance of stating the rate of breathing, whether this is "free" or controlled by the observer, is rightly stressed; failure to appreciate the influence of rate on the result obtained has been responsible for some of the observed lack of repeatability in this test. It can be seen that this test is a direct method of estimating the maximum breathing capacity.

The indirect method, termed the indirect maximum breathing capacity (ind. MBC), is based upon appropriate calculation from the volume of air expired in the first second (or similar fixed time interval) of a maximal, rapid, forced expiration after a full inspiration. This method, which has a number of advantages, has largely replaced the older direct method in most British and Continental centres of importance. The volume of air expired in the first second of a forced expiration is termed the forced expiratory volume at one second (FEV_{1.0}); any desired time interval may be used instead of one second, although the latter is regarded as appropriate for most clinical purposes. It should be stressed that the conversion of measurements of forced expiratory volume to estimates of maximum breathing capacity was not advocated by the group. For scientific purposes such a procedure is obviously redundant, but it has some use in clinical work, because clinicians are more familiar with normal standards for the maximum breathing capacity. When this volume is expressed as a percentage of the vital capacity, the resultant figure is termed the percentage expired in one (or x) seconds. This term may be found insufficiently distinctive as a title, but the abbreviation recommended (FEV%, the time interval being stated) is more specific and descriptive. Attention is drawn to the fact that the vital capacity as conventionally estimated and the vital capacity as estimated from a rapid, forced expiration may differ considerably in certain types of pulmonary disease, notably emphysema. The term vital capacity (VC) (retained for the conventional estimation) becomes forced vital capacity (FVC) when it is estimated on forced expiration. The clinical significance of the difference is that it reflects air-trapping. The arithmetical significance, in the present context, lies in its influence on the calculation of the percentage expired in a given time; it is necessary to state whether the vital capacity or the forced vital capacity is used as the denominator.

There can be little doubt that the introduction to clinical practice of the simple single-breath tests of ventilatory capacity, first described a decade ago, has been delayed by confused terminology and the number of minor variants described by different authors. The pattern of these tests is now clearly defined, and part of the value of the present British system is that the basic terms used can be applied to all these variants. As these tests provide more information more quickly and more reliably than older tests of ventilatory capacity, the adoption of a uniform terminology with some logic behind it will facilitate their wider use.

ABORTION IN THE UNITED STATES.

In 1955, forty-three men and women met in conference first at Arden House and later at the New York Academy of Medicine to discuss illegal and therapeutic abortion. The report of their deliberations has now been published.¹ They comprised representatives, mainly from the United States, of the legal, social, obstetrical and gynaecological, psychiatric and demographical spheres. In addition there were representatives of the Scandinavian countries. Surprisingly enough, a physician convicted of performing illegal abortions also contributed to the conference from his twenty years of experience, during which time he had performed some 5,210 abortions, the women being referred to him by 353 doctors. The details of his methods have been omitted by the editor.

One worthwhile chapter in this book deals with therapeutic abortion in the United States. It contains forty-six pages with some twenty tables, in which the therapeutic abortion rate is related to such things as place of residence, age of mother, order of pregnancy, colour of mother, period of gestation, and type of care. In addition, the indications for intervention, both for New York City and for Copenhagen, are dissected in detail. It is noted that in New

¹ *Thorax*, 1957, 12: 280.

² *Fed. Proc.*, 1950, 9: 602

¹ "Abortion in the United States: A Conference Sponsored by the Planned Parenthood Federation of America, Inc., at Arden House and the New York Academy of Medicine", edited by Mary Steichen Calderone, M.D., M.S.P.H.; 1958. New York: A. Hoeber-Harper Book. 9" x 6", pp. 232. Price: \$5.50.

York City the number of therapeutic abortions per 1000 live births has fallen from 5.6 in 1944 to 2.9 in 1953. In the period 1951 to 1953, 37.8% were performed on account of mental disorder.

The conference found that present laws and mores have not controlled the practice of illegal abortion, which has been ignored or condoned by a large proportion of the general public and the medical and legal professions. The causes of induced abortion are stated to be complex, embracing poor social or economic environment, disturbed marital relations, psychiatric or neurotic disturbance within the family or simply a need to restrict the family. The conference recommended research into the causes and results of illegal abortion, the establishment of consultation centres for women seeking abortion, making family planning available to the under-privileged, as well as to the privileged, the encouragement of higher standards of sexual conduct and of a greater sense of responsibility toward pregnancy, and the framing of new laws recognizing the mounting approval of psychiatric, humanitarian and eugenic indications for the legal termination of pregnancy.

The report is set out throughout in the form of a discussion, and this form makes it more difficult to read and absorb. There are five appendices and an index. However, much good would result if it was read by all doctors, nurses, sociologists, educators, religious leaders, lawyers, legislators, demographers and responsible citizens.

CHLOROTHIAZIDE AS A DIURETIC.

With the recognition, over the past few years, of the important part played by abnormal body retention of sodium in the production of various oedematous states has come the synthesis of a number of organic substances which increase the excretion of sodium and other radicals and may be classed as diuretics. The earlier produced drugs had to be administered intramuscularly; the best known of these were organic mercury compounds such as meralluride (mercuhydrin). There are now available a number of drugs which may be given orally; the most recent of these to appear is chlorothiazide, a substituted benzothiadiazine compound with a free sulphonamide group.

A considerable volume of papers in which chlorothiazide is discussed has already appeared. In one of these R. V. Ford, J. B. Rochelle, C. A. Handley, J. H. Moyer and C. L. Spurr¹ compare the diuretic effects of several of the more recent diuretics—organic mercurials, carbonic anhydrase inhibitors, aminouracils, chlorothiazide and chlorazanol. They studied the electrolyte excretion pattern of six ions (sodium, chloride, potassium, ammonium, bicarbonate and phosphate) after the administration of five diuretics of different types to normal persons on a fixed regime. They point out that the mercurials are the most potent diuretic agents available for use in parenteral form. Among the orally active diuretics, chlorothiazide is the most potent, followed by chloromerodrin, a mercurial, and chlorazanol. The aminouracils, aminometradine and amisometradine, are nearly as active at the beginning, but soon lose their effectiveness on continued administration. The same is true for the carbonic anhydrase inhibitors such as acetazolamide ("Diamox"). This development of drug tolerance seriously limits the usefulness of the aminouracils and carbonic anhydrase inhibitors in the control of oedema. The evidence adduced in this paper indicates that, in all respects so far examined, chlorothiazide is the most useful drug at present available for the oral treatment of oedema.

J. H. Laragh, H. O. Heinemann and F. E. Demartini² have studied the use of chlorothiazide in the treatment of oedema of congestive heart failure, nephrosis and cirrhosis. Their subjects were 32 hospital patients in an advanced state of fluid retention from these conditions. Chlorothiazide, given orally in a dosage of two grammes per day, was found to be highly potent and effective in all

types of oedema studied. Laragh and his colleagues suggest that chlorothiazide should not be given in full dosage (two grammes per day) for more than three or four days unless potassium chloride supplements are given and the state of the plasma electrolytes is carefully followed. The effects of chlorothiazide were found to be additive to those of an organic mercurial compound or a carbonic anhydrase inhibitor (acetazolamide).

N. A. Matheson and T. N. Morgan³ have studied the effects of chlorothiazide as a diuretic in 10 healthy men, their method of investigation being very similar to that of Ford and his colleagues. They report that a single dose of 2000 milligrammes has an effective diuretic action. This action begins within two hours and lasts for at least twelve hours. There is a pronounced increase in the urinary excretion of sodium, chloride and water and some increase in that of potassium, bicarbonate and phosphate.

W. C. Watson, T. J. Thompson and J. M. Buchanan⁴ have made clinical and laboratory studies with chlorothiazide. Twenty-two patients with oedema in various clinical conditions were investigated. Single daily doses of two grammes were given. Most patients reacted very well, but in patients with pulmonary heart disease the response was disappointing. It appears that in certain circumstances there may be great excretion of potassium and bicarbonate.

F. A. Finnerty, junior, J. H. Buchholz and J. Tuckman⁵ have treated 144 pregnant women suffering from hypertension, oedema, albuminuria or other manifestations of toxemia with chlorothiazide, some without and some with acetazolamide ("Diamox") either alternately or simultaneously. A dose of one gramme per day by mouth was found to cause excellent diuresis with reduction of oedema. The results indicate that chlorothiazide is as effective as acetazolamide in decreasing the oedema, and even better results are obtained when they are given simultaneously.

The fall in arterial pressure after administration of chlorothiazide is frequently striking. This hypotensive action has been further studied by E. D. Freis, A. Wanko and A. E. Parrish,⁶ who used chlorothiazide alone and combined with other antihypertensive drugs in the treatment of essential hypertension. Hypertensive patients were kept in hospital on a constant intake of sodium chloride until the blood pressure became stable. Chlorothiazide in amounts of 1.5 grammes per day reduced the systolic blood pressure in all cases, the average reduction being 18.7%, and this reduction was maintained while the administration was continued. In ambulatory patients, when chlorothiazide was given as a supplement to other hypotensive drugs, there was an additional fall of blood pressure. The blood pressure of normotensive subjects is not reduced by chlorothiazide. The advantages of chlorothiazide in the treatment of hypertension are stated by Freis *et alii* to be: (i) a significant antihypertensive effect in a high percentage of patients, particularly when the drug is combined with other agents; (ii) absence of significant side effects or toxicity; (iii) absence of tolerance; (iv) effectiveness with simple rule-of-thumb oral dosage schedules.

It would seem that chlorothiazide is a very useful drug for the treatment of oedema from many causes, being highly effective in increasing sodium excretion, non-toxic in ordinary doses, easy to administer orally and not producing tolerance. Its effect on hypertension is interesting and worth further study. It is not clear how it acts, but the evidence suggests that its antihypertensive action is secondary to its salt-depleting action. On the other hand, it may have a direct anti-hypertensive action not dependent on the excretion of sodium or other radicals. Two further contributions to the study of chlorothiazide are published elsewhere in this issue, one by R. J. Marshall, on the physiological effects of chlorothiazide in health and in disease, the other by A. J. Barnett and R. J. Marshall, describing the results of further research into the role of chlorothiazide in the treatment of hypertension.

¹ *Lancet*, 1958, 7032:1195 (June 7).

² *Lancet*, 1958, 7032:1199 (June 7).

³ *J.A.M.A.*, 1958, 166:141 (January 11).

⁴ *J.A.M.A.*, 1958, 166:137 (January 11).

⁵ *J.A.M.A.*, 1958, 166:129 (January 11).

⁶ *J.A.M.A.*, 1958, 66:145 (January 11).

Abstracts from Medical Literature.

PHYSICAL MEDICINE AND REHABILITATION.

External Rotation of the Tibia in Flaccid Paralysis.

G. G. HIRSCHBERG AND L. LEWIS (*Arch. Phys. Med.*, May, 1957) state that external rotation contracture of the knee is a common deformity in poliomyelitis patients. It is not necessarily caused by muscle imbalance or by a tight iliotibial band. It is probably due to the effect of gravity on a joint relaxed to a considerable degree. The authors hold that whatever the mechanism may be in an individual case, the deformity can always be prevented by adequate support of the lower extremities. They describe some methods by which this support may be afforded.

Rehabilitation in a Chronic Disease Hospital.

J. S. TOBIS, M. LOWENTHAL AND I. BELMONT (*Arch. Phys. Med.*, February, 1958) describe the services available in the physical medicine and rehabilitation department of a chronic disease hospital of 2000 beds which is part of the New York Medical College, Metropolitan Medical Center. The subjects discussed include ward patient care, sheltered workshop programme, prosthetic clinic, occupational therapy programme for a psychiatric service, hospital-wide activities of daily living programme, education and research. The authors present a statistical analysis of the services provided, the active sheltered workshop programme, problems in the management of young adult patients in a chronic disease set-up, accident control and the children's rehabilitation programme. At the hospital they teach that: (i) Physical medicine and rehabilitation are concerned with patients with musculo-skeletal disability. (ii) Acute and chronic disease must be regarded as two aspects of one process. (iii) Physical medicine and rehabilitation observe increments of disability and seek to provide increments of function. (iv) Physical medicine and rehabilitation provide essentially symptomatic therapy. The authors point out that private homes and old-age homes are social settings which have been transformed into medical settings because of need. On the other hand, chronic disease hospitals must meet the social needs of the chronically ill patient. Chronic disease must be recognized as having a dual character—a social and biological nature. They express the hope that their review may help others to understand better the problems in the care of the chronically ill in any setting.

Residual Disability after Poliomyelitis.

K. S. LAUDAUER AND G. STICKLE (*Arch. Phys. Med.*, March, 1958), in an analysis of residual disabilities among 100,000 poliomyelitis patients, state that more than 300,000 people alive today in the United States of America have had

paralytic poliomyelitis. Well over half of these were stricken in the decade since 1947. The reduction in incidence of poliomyelitis since the introduction of Salk vaccination enables the National Foundation for Infantile Paralysis to intensify its after-care programme, and the present paper is an attempt to analyse the extent of the problem. The authors begin by pointing to the success of the 16 respiratory and rehabilitation centres, established with the help of the National Foundation since 1950, to treat severely disabled patients, including those with respiratory paralysis and quadriplegia. Of 4200 patients admitted to these centres, over 90% have been discharged to their homes, and the point is made that this success has demonstrated that the best care is the cheapest, and indicates how much more can yet be done for thousands of less severely disabled patients. The data on which the analysis is based are obtained from forms issued by the National Foundation for Infantile Paralysis. Forms were received for 102,000 patients admitted to hospital for poliomyelitis in the United States between July, 1952, and December, 1956. Of these, 43,000 referred to patients with paralytic poliomyelitis, aged more than three years. These returns are analysed as to the extent of the residual disability in an attempt to evaluate the extent of the rehabilitation problem among poliomyelitis victims in the nation as a whole. It is estimated that about 190,000 paralytic poliomyelitis patients of the past decade still survive. Of these, about 19,000 had no residual disability, 43,000 had slight muscle weakness, 78,000 had moderate paralytic involvement, and 50,000 were severely crippled.

Paralytic Spinal Curvature in Childhood.

R. A. HAAG (*Arch. Phys. Med.*, April, 1958) describes a method of attempting to prevent increasing paralytic spinal curvature in the growing child. He states that some correction has been obtained in growing children by the application of a puller to a spinal brace, but that to obtain this result great care must be taken as to the location at which the puller is attached to the brace; this is determined by the site of the apex of the curve. X-ray control is necessary. The author states that this is a stop-gap method of treatment, to prevent increasing deformity, and is useful only in the young growing child.

Elderly Double Above-Knee Amputees.

M. LOWENTHAL, A. O. POSNIAK AND J. S. TOBIS (*Arch. Phys. Med.*, May, 1958) discuss the rehabilitation of elderly double above-knee amputees in the light of their experience with 49 such patients at a hospital for chronic disease. They state that such patients present one of the most difficult problems in rehabilitation; in an earlier period they were generally considered wheelchair-bound. The average age of their patients was 73 years; 50% of these patients had had their second amputation within one year of the first; the average age at the time of the second amputation was 67.5 years; and the average expectation of life after the second amputation was at least five

years. The authors conclude that there are a significant number of such patients in chronic disease institutions; that rehabilitation with ambulation on pylons or on regular limbs is a feasible goal in selected cases. A patient's determination may overcome handicaps of chronological age and associated medical conditions. The authors consider that pylons are easier for the patient to master than regular prostheses; on the other hand all patients object to the cosmetic effect of pylons, and women patients refuse to consider using them. One of the author's successful patients was discharged to live in a boarding house at the age of 67 years, after 23 years of institutional living. Finally, the authors point out that these patients offer an important field for investigation into such questions as the effects of amputation on their insulin requirements (many were diabetics), contractures and cardiovascular adjustment.

The Paraffin Bath.

C. W. STIMSON AND P. A. NELSON (*Arch. Phys. Med.*, April, 1958) discuss the value of the paraffin bath as a form of thermotherapy, and describe experiments in which the effects of six different immersion procedures, three in hot paraffin and three in hot water, are compared for their effect on skin temperatures determined before, during and after immersion. They found that immersion in hot paraffin produced a more intense and more persistent hyperemia of the immersed part than did immersion in hot water. The skin after immersion in paraffin is moist, smooth and oily rather than dry and wrinkled, as it is after immersion in hot water. The authors conclude that continuous immersion in melted paraffin wax for periods of 30 minutes at temperatures between 124° F. and 129° F. is an effective, safe and convenient way of applying heat to the hands, wrists and elbows, and to the feet and ankles. They describe how an ordinary electric roaster can be easily adapted for use as a paraffin bath in the home, and how to prevent the disagreeable odour which develops after repeated use of a paraffin bath. The history of treatment with the paraffin bath is briefly reviewed. The paraffin bath is stated to be a useful adjunct for local treatment of such conditions as rheumatoid arthritis, osteoarthritis, tenosynovitis, and reflex sympathetic dystrophy. Contraindications are impaired arterial or venous circulation, dermatitis, open wounds, or heat sensitivity.

NEUROLOGY AND PSYCHIATRY.

The Collateral Circulation of the Cerebral Hemispheres.

L. A. MOUNT AND J. M. TRAVERAS (*Arch. Neurol. & Psychiat.*, September, 1957) discuss the arteriographic demonstration of the collateral circulation of the cerebral hemispheres. The circle of Willis is the most important source of collateral circulation and its anterior part is the dominant contributor. It is extremely variable, as it is usually irregularly developed and conforms to the

so-called normal pattern in only 18% of cases. Direct anastomoses of the anterior middle and posterior cerebral arteries with each other have been demonstrated by arteriography. There are direct end-to-end anastomoses or smaller connecting channels as follows: (i) between the anterior and middle cerebral arteries; (ii) between the anterior and posterior cerebral arteries; (iii) between the posterior cerebral and middle cerebral arteries; (iv) among various branches of both anterior cerebral arteries, in addition to the anterior communicating branches. There are communications between the external and internal carotid arteries and their branches by way of the ophthalmic artery, by back flow from the external into the internal carotid and by anastomoses between the middle meningeal and the meningeal branch of the internal carotid, and via the rete mirabile.

Anticoagulants and Experimental Haemorrhagic Cerebral Infarction.

M. W. WOOD *et alii* (*Arch. Neurol. & Psychiat.*, April, 1958) discuss the relationship between anticoagulants and haemorrhagic cerebral infarction in experimental animals. Gross quantitative measurement of the infarcts was made and the amount of haemorrhage that had taken place was graded microscopically. The results of this experiment indicate that cerebral infarcts were more extensively haemorrhagic when dogs were given anticoagulants soon after infarction had been induced than when the dogs did not receive anticoagulants. Also, that after the immediate effects of the initial infarction had passed, the mortality rate among dogs which thus received anticoagulants was significantly higher than it was among the animals to which anticoagulants had not been given.

Treatment of Myotonia with Procainamide.

D. S. MACROBBIE AND W. J. FRIEDLANDER (*Arch. Neurol. & Psychiat.*, November, 1957) describe a clinical trial in which six patients with myotonia dystrophica were treated with procainamide given orally. They found that there was significant diminution of the "voluntary contraction myotonia". However, the myotonia following percussion was not appreciably altered. Five were aided enough to warrant continuation of the drug. Improvement started within one hour, after oral administration of a single dose, and was still noticeable after four hours.

Thymectomy in Myasthenia Gravis.

J. A. SIMPSON (*Brain*, March, 1958) discusses the value of thymectomy in myasthenia gravis in the light of a research into the records of patients diagnosed as suffering from myasthenia gravis at the National Hospital for Nervous Diseases since 1934. He concludes there is a substantial chance of improvement after thymectomy in all cases. This is most evident and the saving of life is greatest when the duration of the condition is less than five years and no thymoma is present. After seven years there is less likelihood of improvement after the operation, but it may still occur. At the same time the risk of death from myasthenia is then less

whether operation is performed or not. After operation the extent of improvement is more significant in women and they have a poorer prognosis than men if untreated. The prognosis for life remains poor if a thymoma is present, though pre-operative radiotherapy may be beneficial. The maximum improvement occurs in patients who first show symptoms at an earlier age and who have their operation when younger than the average patient, but the difference is insufficient to influence the selection of cases for operation.

Pineal Gland Displacement in Acute Cerebrovascular Occlusion.

J. B. DROBI, S. TARTAKOFF AND M. J. LE MAY (*Arch. Neurol. & Psychiat.*, September, 1957) describe a case in which there was pineal gland displacement after an acute cerebro-vascular occlusion. They suggest that cerebral oedema followed a cerebral infarction caused by an occlusion of the left middle cerebral artery. The pineal gland was shifted seven millimetres to the contralateral side and later reverted to its normal position. Six months later a pneumoencephalogram demonstrated marked cerebral atrophy at the site of the infarct.

Memory Deficit Caused by Hippocampal Lesions.

W. PENFIELD AND B. MILNER (*Arch. Neurol. & Psychiat.*, May, 1958) discuss memory deficit produced by bilateral lesions in the hippocampal zone. They conclude that bilateral removal of the hippocampus and hippocampal gyrus in man produces loss of recent memory. As soon as he has turned his attention to something else, the patient is unable to remember what was happening a moment earlier. It is as though he had made no record of present experience. He also has a retrograde memory loss that covers a considerable period pre-operatively. Despite these deficiencies, memory for distant past is not lost, nor is there corresponding loss of attention, concentration, reasoning ability or previously acquired skills. The intelligence quotient shows no drop when compared with pre-operative testing. There is no interference with speech, and the memory of words is unimpaired. They conclude that an essential part of the recording mechanism is contained in the hippocampal zone. They also suggest that another part of the mechanism lies in the central integrating circuits of the brain stem, circuits that have duplicate connexions with the two hippocampal areas.

The Electroencephalogram in Diffuse Encephalopathies.

S. LESSE, P. F. A. HOEFER AND J. H. AUSTIN (*Arch. Neurol. & Psychiat.*, April, 1958) discuss the electroencephalogram in diffuse encephalopathies. Their report deals with a group of 11 patients who suffered from encephalopathies and had similar abnormalities in their electroencephalograms, that is, periodic synchronous bursts of high amplitude slow wave activity, at times irregular in pattern but usually with spike-and-wave-like components. The illnesses represented a wide range of aetiologies, apparently unrelated. The clinical course

also varied widely. Clinically, the patients showed mental impairment, myoclonic seizures, generalized convulsions, choreo-athetoid movements and rigidity. These features did not occur in all cases but were present in some of them at various times. This electroencephalogram pattern is thought to be an indication of diffuse cerebral impairment, which may be transient or permanent, with structural changes of varying severity, not limited to any age group and of non-specific aetiology. They suggest that the periodic synchronous discharges in the encephalogram are indicative of a certain level of cerebral, chiefly cortical, impairment.

The Psychotherapy of Homosexuality.

S. B. HADDEN (*Am. J. Psychiat.*, March, 1958) discusses the treatment of homosexuality by individual and group psychotherapy. The homosexual is difficult to handle in a mixed neurotic group, as he arouses too much anxiety and hostility in other members. Accordingly the author (who has had over 30 years of experience with individual treatment of homosexuals) attempted to treat two groups consisting exclusively of male homosexuals. Three private patients who remained together for less than a year constituted the first group, and their histories are briefly outlined. A second group of seven members confirmed the observations made in the initial project. The author claims that the common rationalization of the homosexual that he is satisfied with his way of life is quickly broken down in group therapy, and feels that support by the group helps him to become "committed" to heterosexuality. Another advantage which group therapy provides is the overcoming of feelings of isolation achieved through identification with the group. The therapist's tolerant and accepting attitude is one of the most therapeutic factors involved in the treatment.

Childhood Schizophrenia.

H. L. MOSSE (*Am. J. Psychiat.*, March, 1958) is concerned by the much-abused diagnosis of childhood schizophrenia, at present very fashionable in the United States of America. He studied 60 patients, below the age of 14 years, diagnosed as suffering from schizophrenia at Lafargue Clinic, New York, and concluded that the diagnosis was wrong in practically all of them. The group included patients with behaviour problems, patients with organic disorders and psychopaths. The author points out that one of the most important gaps in our knowledge is that the limits of normal for children of different ages have not yet been established and comments that magical thinking and fantasy preoccupation may be normal features, yet lead to the diagnosis of schizophrenia in an aggressive child. He considers that no child should be diagnosed as suffering from schizophrenia who does not produce a characteristic design on the mosaic test. He points out how dangerous this diagnosis can be for the child, and how his future can be seriously affected as a consequence. Some of his patients had been given a course of 20 electroconvulsive treatments, and in other places lobotomies are being recommended.

British Medical Association.

FEDERAL COUNCIL.

A MEETING of the Federal Council of the British Medical Association in Australia was held at the Medical Society Hall, 426 Albert Street, East Melbourne, from September 4 to 6, 1958. The President, DR. H. C. COLVILLE, was in the chair.

REPRESENTATIVES.

The following representatives of the Branches were present:

New South Wales: Dr. W. F. Simmons, Dr. A. J. Murray, Dr. R. H. Macdonald, Dr. E. F. Thomson.

Queensland: Dr. A. E. Lee, Dr. D. P. Sapsford.

South Australia: Dr. L. R. Mallen, Dr. C. O. F. Rieger.

Tasmania: Dr. L. M. Gollan, Dr. F. R. Fay.

Victoria: Dr. H. C. Colville, Dr. J. G. Johnson, Dr. T. G. Swinburne.

Western Australia: Dr. C. W. Anderson, Dr. D. M. Clement.

The President welcomed Dr. F. R. Fay, who had taken the place of Dr. J. B. G. Muir as a Tasmanian representative. The President referred to the services that Dr. Muir had rendered, and it was resolved that the Federal Council should place on record its appreciation of the valuable services rendered to the Federal Council and to the profession in Australia by Dr. J. B. G. Muir whilst a member of the Federal Council.

DEATH OF SIR VICTOR HURLEY.

The President referred to the death of Sir Victor Hurley, which had taken place on July 17, 1958, and made particular mention of his services to the British Medical Association.

The members of the Council stood as a mark of respect to the memory of Sir Victor Hurley, and the following resolution was adopted:

The Federal Council of the British Medical Association in Australia records with deep regret the death of Thomas Ernest Victor Hurley, K.B.E., C.B., C.M.G., V.D., M.D., M.S., F.R.C.S. (Eng.), F.R.A.C.S., who was a member of the Council from 1946-1951 and President in 1949 and 1950. He accepted this office at great personal sacrifice at the unanimous desire of the Council and the medical profession throughout Australia, and in this capacity, as well as that of a member of the Victorian Branch Council for thirty-seven years, he rendered sterling and devoted service to the British Medical Association. The Federal Council extends its sincere sympathy to Lady Hurley and her family.

FINANCE.

Financial Statement.

The Honorary Treasurer, Dr. W. F. Simmons, presented the financial statement of the Federal Council as at August 31, 1958, and a statement of the estimated expenditure for 1959.

A discussion took place on the question of the contribution rate for 1959, and it was resolved that the contribution of the Branches to the expenses of the Federal Council for that year should be at the rate of twenty-five shillings for each member on the membership list as at January 1, 1959.

The Honorary Treasurer then moved the following motion, of which he had given notice twenty-eight days previously:

That By-Law 15 (iii) be amended by the addition of the following words at the end of the by-law:

"Payment of such sum or sums shall be made not later than the 31st of March in each year."

This motion was rejected. The matter was discussed further, and several proposals were put forward. As an amendment to the by-laws was not possible without the giving of twenty-eight days' notice, it was suggested that By-Law 15 (iii) should be amended so that it would read:

To meet the general and other expenses of the Federal Council the Treasurer of each Branch shall pay to the Federal Council such sum or sums as the Federal Council may require, provided that the total so payable in any year shall not exceed a sum equal to twenty-five shillings per member of the Branch as at 1st January in that year. Payment of such sum or sums shall be made in two equal instalments in January and July each year.

It was decided that steps should be taken to bring this motion before the members of the Federal Council for consideration after the necessary twenty-eight days' notice of motion had been given.

Organization Fund.

The Honorary Treasurer, Dr. W. F. Simmons, then presented the financial statement of the Organization Fund for the period ended August 31, 1958. The balance standing to the credit of the Fund was £614.

Federal Independence Fund.

The Honorary Treasurer presented the financial statement of the Federal Independence Fund, the credit balance of which stood at £23,773 16s. After discussion of the amount of this that was held in bank deposits and invested in Commonwealth Treasury Bonds, the Federal Council resolved that the Honorary Treasurer be empowered to seek expert advice as to the investment of Federal Council money.

Entertainment Fund.

The Honorary Treasurer presented the financial statement of the Entertainment Fund for the period ended August 31, 1958. He pointed out that the credit balance of £277 in the Fund would probably be expended during the entertainment of the Council of the World Medical Association during 1959.

Income Tax Returns.

It was reported that the income tax return of the Federal Council for the twelve months ended December 31, 1957, had been submitted.

Travel Insurance for Members of Federal Council and of Secretariat.

It was reported that the necessary action had been taken to put into effect the resolution carried at the previous meeting of the Federal Council relating to the travel insurance covers for members of Council and the Secretariat.

HENRY SIMPSON NEWLAND PRIZE FOR SURGERY.

The Honorary Treasurer presented the financial statement of the Henry Simpson Newland Prize Fund for the period ended August 31, 1958. It was pointed out that the sum of £102 had been paid out in the earlier part of 1958 through the awarding of the prize and the accompanying medallion to Dr. Neville C. Davis during the Australasian Medical Congress (B.M.A.). The credit balance of the Fund stood at £1018.

FEDERAL MEDICAL WAR RELIEF FUND AND MEDICAL OFFICERS' RELIEF FUND (FEDERAL).

The Honorary Treasurer presented the reports of the Federal Medical War Relief Fund and the Medical Officers' Relief Fund (Federal) for the six months ended June 30, 1958, on behalf of the trustees. The credit balances of these funds stood respectively at £16,800 and £7061. In both cases a number of amounts had been paid out to beneficiaries, and it had been necessary to sell some of the Commonwealth Treasury Bonds belonging to the funds, as the disbursements exceeded the income from the capital amount of the funds.

QUEEN'S BIRTHDAY HONOURS.

The General Secretary reported that letters of congratulation had been sent to the following members of the Association on the occasion of the conferring of honours upon them by Her Majesty the Queen: Sir Macfarlane Burnet, O.M.; Sir Benjamin Edye, Knight; Sir Kenneth Fraser, Knight; Sir John Eccles, Knight; Group Captain R. B. Davis, O.B.E.; Dr. S. A. McDonnell, O.B.E.

MEDICAL PRACTICE IN AUSTRALIA.

The General Secretary reported that he had received a number of letters from medical practitioners overseas inquiring about conditions of medical practice in Australia and had sent a suitable reply in each case.

PHARMACEUTICAL DISPENSING SERVICES IN SOUTH AUSTRALIA.

Reference was made to the fact that at the meeting of the Federal Council in February, 1958, a discussion had taken place on the dissatisfaction with the emergency dispensing service provided by pharmaceutical chemists in South Australia during the week-ends, and it was resolved that the Federal Council should draw the attention of the Federated Pharmaceutical Service Guild of Australia to the complaint of the South Australian Branch. Subsequently

correspondence had been carried on with the Federated Pharmaceutical Service Guild of Australia. The South Australian delegates reported that the matter was becoming adjusted.

INTERNATIONAL UNION OF ASSOCIATIONS OF DOCTOR MOTORISTS.

The General Secretary referred to a letter that he had received regarding the International Union of Associations of Doctor Motorists, and to correspondence that he had had on the subject with Dr. Robert Southby. After some discussion it was decided to seek further information regarding the body concerned.

PROTECTION ON ELECTRIC RADIATORS.

The General Secretary referred to the request made by Dr. David L. Dey that Federal Council should take action to initiate legislation to enforce fitting of adequate grills to electric radiators. He read further correspondence which indicated that suitable action was being taken by the authorities concerned.

AUSTRALIAN INSTITUTE OF HOSPITAL ADMINISTRATORS.

The General Secretary read a letter received from the Australian Institute of Hospital Administrators in which they had drawn attention to the activities of the Institute to promote and develop education for hospital administration by establishing a diploma course on the subject to start in 1959.

REQUESTS FOR INFORMATION FROM CANADA.

The General Secretary referred to a request from the Victoria Medical Society, British Columbia, for information on health insurance in Australia and from the Department of Health and Welfare Hospital Insurance Service, Victoria, British Columbia, for information on medical benefits schemes operating in Australia. He said that in each case the necessary information had been supplied.

DOCTORS AND POLITICAL DISTURBANCES IN CUBA.

The General Secretary read a copy of resolutions adopted by the Forty-Second National Medical Assembly, Havana, December, 1959, regarding certain medical practitioners whose conduct during recent political disturbances in Cuba had incurred the censure of the Federacion Medica de Cuba.

EDUCATION CONFERENCE.

The General Secretary reported that the Australian Teachers' Federation had invited the Federal Council to send representatives to a conference in Canberra in May, 1958, to discuss "Education and National Responsibility". The conference had been attended by Dr. Angus McNeil as an observer on behalf of the Federal Council, and a report prepared by Dr. McNeil had been circulated.

NATIONAL MARRIAGE GUIDANCE COUNCIL OF AUSTRALIA.

The General Secretary reported that the National Marriage Guidance Council of Australia had requested the Federal Council to appoint a delegate to attend the annual meeting of the National Marriage Guidance Council to be held in Melbourne from September 11 to 14, 1958. Dr. Robert Southby had agreed to attend.

AUSTRALIAN AND NEW ZEALAND ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The General Secretary reported that Dr. C. O. F. Rieger had been appointed the representative of the Federal Council at the Twenty-Third Congress of the Australian and New Zealand Association for the Advancement of Science, held in Adelaide from August 20 to 27, 1958. Dr. Rieger had prepared a report which was submitted to the meeting of the Council.

SURGICAL SUPPLIES.

The General Secretary read a letter from the Royal Australasian College of Surgeons which drew attention to the poor quality of surgical supplies available and requested the Federal Council to make representations to have restrictions removed from the importation of Canadian and American surgical supplies. The General Secretary said that he had taken the matter up with the Federal Minister for Health, who had referred it to the Minister for Trade and Customs, who advised that he would inquire into the matter. For the information of the Minister the College was asked to furnish specific examples of restrictions on importation of instruments from dollar countries. The members of the College Council had expressed appreciation of the Federal Council's action.

FURNISS V. FITCHETT.

The General Secretary reported that he had received from the New Zealand Branch of the British Medical Association a copy of the judgement in the case of Furniss v. Fitchett, in which the main issue was the question of disclosure of confidential information by a doctor to a husband regarding his wife.

CONFEDERATION OF MEDICAL ASSOCIATIONS OF ASIA AND OCEANIA.

The General Secretary referred to a letter which had been received from the Confederation of Medical Associations of Asia and Oceania, seeking the Federal Council's approval for the appointment of Dr. Kempson Maddox to the Board of Directors of the Confederation. It was decided to ask the General Secretary to obtain more information.

SUPPLY OF FREE MILK TO CHILDREN.

The General Secretary referred to a letter from the Australian Council of School Organizations seeking the opinion of the Federal Council on the desirability of extending the supply of free milk to children attending secondary schools. The matter was referred to the Branches, and their opinions were presented to the meeting. After discussion it was resolved that, while the Federal Council recognized the nutritional value of milk for growing children of more than twelve years of age, it considered that the extension of the provision of free milk to secondary school children was unnecessary under present conditions.

THIRD INTERNATIONAL CONGRESS OF SCHOOL AND UNIVERSITY HEALTH.

A letter was received in which information was provided regarding the Third International Congress of School and University Health to be held in Paris in July, 1959. This had been brought to the attention of the Branches.

ROYAL SINGAPORE CHEST CLINIC.

The General Secretary referred to a letter obtained from the Royal Singapore Chest Clinic requesting detailed information on the Medical Benefits Fund of Australia. He said that the information had been supplied.

NATIONAL CONFERENCE ON INDUSTRIAL SAFETY.

An invitation was received from the Minister of Labour and National Service for the General Secretary to attend the National Conference on Industrial Safety to be held at Canberra on September 26 and 27, 1958. It was agreed that the General Secretary should attend.

AUSTRALASIAN MEDICAL CONGRESS (B.M.A.).

Tenth Session.

Reports, with the final financial statement, were received from the Honorary Secretary and Honorary Treasurer of the Tenth Session of the Australasian Medical Congress (B.M.A.), held in Hobart from March 1 to 7, 1958. The Honorary Treasurer of Federal Council referred to the excess of expenditure over income of the Tenth Session, which had amounted to over £6000. The reasons for this were discussed.

A resolution was passed in which the Federal Council expressed its appreciation to the Tasmanian Branch for the highly successful organization of the Tenth Session.

Eleventh Session.

A letter was received from the College of General Practitioners advising the Federal Council that the College Council favoured a revision of the pattern of future sessions of the Australasian Medical Congress (B.M.A.) to provide for (i) morning plenary sessions to discuss the importance and concerns of the profession and (ii) afternoon sessions—first, for group discussion of matters arising out of the plenary sessions, and second, for such sectional meetings as might be considered essential. The matter was discussed, and it was decided to thank the College of General Practitioners for the letter and to say that the suggestions would be forwarded to the Executive Committee of the Eleventh Session.

AUSTRALASIAN MEDICAL PUBLISHING COMPANY LIMITED.

The General Secretary drew attention to the notice of the directors' meeting of the Australasian Medical Publishing Company Limited, which was held in Melbourne on Wednesday, September 3, 1958, and also to the notice of the general meeting of the company to be held on September 10, 1958, at The Printing House, Glebe, N.S.W.

PROCEDURE IN MEDICO-POLITICAL NEGOTIATIONS.

At the meeting of the Federal Council in February, 1958, it was resolved that, whenever necessary or desirable, an invitation be extended to various colleges and associations concerned to nominate representatives who might be coopted to a Committee of the Federal Council to consider matters involving the interests of the college or association concerned.

The General Secretary reported that the terms of the resolution had been conveyed to the various colleges and associations concerned. A number of replies had been received expressing approval of the attitude of the Federal Council. In a letter from the Secretary of the Royal Australasian College of Surgeons, it was stated that the Council of the College had passed a resolution to the effect that the College sought guarantees from the Federal Council that no negotiations be undertaken and no agreements made with government bodies concerning the following matters without proper consultation with the College and representation on any negotiating body: (i) any question concerning registration of specialists or a specialists' register or a definition of surgical specialists; (ii) any question of financial remuneration or benefit, including insurance rebate, which involved specialist surgical service or its relationship to practitioner service; (iii) matters involving surgical organization or surgical staffing of hospitals or government medical services. The Council of the College had also reaffirmed that, though the College had no wish to initiate any separate negotiations with government bodies, it reserved the right to do so should it so decide. The Acting Honorary Secretary of The Royal Australasian College of Physicians, in his reply, had said that the Council of the College had noted with appreciation the terms of the resolution of the Federal Council. The Council of the College would certainly wish to cooperate in every way possible, but at the same time desired to stress its right of independent approach on medico-political matters should that become necessary.

The General Secretary said that the letters from the two Royal Colleges had been referred to the Branches, and the comments of the Branches were presented to the meeting. After discussion, in which it was agreed that unity within the profession was of the greatest importance, it was resolved that the Royal Australasian College of Surgeons should be informed that the Federal Council approved of the major aspects of the three subjects mentioned in its letter as being appropriate matters for action as suggested by the Federal Council in its previous letter. It was further decided that the matter of a meeting of the President of the Federal Council with the President and Chairman of the Executive of the Royal Australasian College of Surgeons be left in the hands of the President of the Federal Council, and that at the next meeting of the Federal Council consideration should be given to the desirability of calling a conference between the three Royal Colleges, the College of General Practitioners, and the Federal Council to discuss the question of negotiations on medico-political matters.

MEDICAL PLANNING.

National Health Service.

National Health Act.

The General Secretary reported that he had received from the Director-General of Health copies of the consolidated *National Health Act*, 1953-1957, including amendments to date.

At the meeting of the Federal Council in April, 1958, a letter was received from the Victorian Branch drawing attention to the possibility of the imposition of a substantial penalty on a member following a recommendation of the State Committee of Inquiry, and the Federal Council had decided to make further representations to the Minister for Health to provide for the right of appeal against penalties imposed under the *National Health Act*. Those representations were subsequently made, but the Minister for Health had replied regretting that he was unable to meet the Council's wishes in the matter. The matter was referred to the Branches. The Queensland Branch Council resolved that the letter be received. The New South Wales Branch Council recommended that the letter be reviewed at a later date. The Victorian Branch Council expressed their dissatisfaction with the Minister's reply, and asked for reasons for the decision. The South Australian Branch Council suggested that the Federal Council obtain legal opinion on the question. The Western Australian Branch Council considered that no useful purpose would be served by pursuing the matter further. The Tasmanian Branch Council regarded the Minister's decision as deplorable, and asked the Federal Council to take such action as was necessary to have the matter rectified. After further discussion the Federal Council decided to take no further action at present.

Future of the National Health Service.

Reference was made to proposals that had been put forward by the Australian Labour Party with regard to a National Health Service. It was reported that executive officers of the Federal Council had, by invitation, met the members of the National Health Scheme Committee of the Australian Labour Party and advised that committee of the views of the medical profession. A report of the conference was presented, together with a full account of the address given by the President of the Federal Council, which made clear the policy of the Federal Council.

The General Secretary reported that a letter had been received from the Victorian Branch expressing the opinion that conferences should be sought by the Federal Council with the Federal Australian Labour Party, the Federal Liberal and Country Parties and the Federal Democratic Labour Party with the object of discussing their views on the Page scheme and the scheme of the special committee of the Australian Labour Party. A general discussion took place on this.

A further discussion was held on the decision made at the meeting of the Federal Council in April, 1958, to initiate a publicity campaign in regard to a National Health Service. It was decided that the Federal Council should authorize the preparation of an article to be published in all States under the signature of the President, pointing out the virtues of the National Health Scheme, and in particular of the proposed new amendments to the *National Health Act*. The drafting of the article and the timing of publication were left in the hands of the publicity committee.

The Council discussed with the Minister for Health the question of amending the *National Health Act* to provide for the immediate coverage of medical and hospital benefits for fund contributors suffering from chronic and pre-existing diseases. It was understood that these would be the subject of early legislation.

After discussion it was resolved that while the Federal Council expressed its satisfaction with the principles of the proposal to the Minister for Health, it believed that the details of those proposals demanded the consideration of the Commonwealth Insurance Council.

Pensioner Medical Service.

At the meeting of the Federal Council in February, 1958, the possibility was discussed of the Government offering increases in payment under the Pensioner Medical Service less than those recommended by the Federal Council. Subsequently a letter was received from the Minister for Health advising that the Commonwealth had agreed to increase the fees payable to medical practitioners under the Pensioner Medical Service to 11s. for surgery consultations and 13s. for domiciliary visits. This information was referred to the Branches, but it was pointed out that such amounts represented a considerable concession, as the amounts of 12s. 6d. and 15s., which were regarded as appropriate by the Federal Council in themselves, represented a concessional reduction of approximately 40% on current private fees. The Federal Council had also recommended to the Branches that in the event of a new agreement being entered into, the period of the agreement should be two years. On the receipt of favourable replies from the Branches the Minister for Health was advised accordingly, and the new agreement came into force with effect from July 1, 1958.

A letter was received from the New South Wales Branch recommending that the Federal Council make representations to have the present voucher form in use for the Pensioner Medical Service amended by the deletion of the patient's address therefrom. After consideration of the views of the several Branches, the Federal Council rejected the recommendation.

General Pharmaceutical Benefits.

The General Secretary referred to a number of letters that had been received from the Branches recommending various additions to the list of benefits allowed under the pharmaceutical benefits regulations. He said that the recommendations had all been forwarded to the appropriate authorities.

Medical Services Committees of Inquiry.

The General Secretary referred to a number of decisions that had been made as the result of the deliberations of the Medical Services Committees of Inquiry, and had been published in the *Commonwealth of Australia Gazette*.

A further discussion took place on the question of legal representation of medical practitioners appearing before committees of inquiry, and it was resolved that the matter should be taken up with the Minister for Health.

Medical Benefits.

At the meeting of the Federal Council in February, 1958, it was resolved that the Minister for Health be informed that, while appreciating the fact that some recommendations in regard to anomalies were included in the schedule of medical benefits, the Federal Council regretted that many were not approved, and it was decided to suggest respectfully to the Minister that in the event of any further alterations an opportunity might be afforded for consultation before the final amendments were determined. The General Secretary reported that the Minister, in a reply, had said that the suggestion of the Federal Council would be kept in mind when a review of the existing schedule was again contemplated. After further discussion the Federal Council resolved that the members of the deputation appointed by the Federal Council at its meeting in August, 1957, namely, the President, Dr. H. C. Colville, the Vice-President, Dr. A. J. Murray, Dr. A. E. Lee and the General Secretary, Dr. J. G. Hunter, should prepare a revised schedule of medical benefits under the *National Health Act* for submission to the next meeting of the Federal Council.

Consequent on a resolution at the meeting of the Federal Council in February, 1958, a recommendation was made to the Minister for Health that, in addition to a consultation benefit, a benefit be payable for proof of puncture of a maxillary antrum, when carried out as a diagnostic measure. The General Secretary advised that, in his reply, the Minister had said that it was not usual for Commonwealth benefits to be paid in respect of a consultation when a specific service had been rendered at the same attendance. In cases of that nature Commonwealth benefit was payable only in respect of the particular professional service. Therefore a contributor who consulted a medical practitioner and had a proof of puncture of the maxillary antrum on the same occasion would qualify for a Commonwealth benefit of 15s. under Item 126 of the schedules of benefits. The Minister went on to say that consideration had been given to the proposal to pay Commonwealth benefit in respect of both the consultation and the service, but in the light of the policy already outlined it was considered that benefit for the consultation was not payable in the instance under discussion.

Identification of Services in Itemized Accounts.

The General Secretary referred to correspondence that had gone on with the Director-General of Health as a result of the discussion at the meeting of the Federal Council in February, 1958, on the request of the Commonwealth Health Department that practitioners should include in their accounts "sufficient details to permit ready identification of services rendered". The Director-General said that apparently some medical practitioners had taken this to mean that the department desired that doctors' accounts should show the nature of the ailment, particularly in the case of Item 1 (consultations and visits). The Director-General said that that was not so. The department had never sought to have the nature of the illness stated in doctors' accounts for consultations, or for any other professional services. He asked that the accounts should state the dates on which the professional services were rendered and the nature of those services (preferably described by reference to the terminology used in the medical benefits schedules), so that the benefits payable might be correctly assessed. In addition to the description of the service, the inclusion of the schedule item number was of assistance, e.g., consultation or visit—Item 1. The Director-General requested that the matter should be clarified through the columns of *THE MEDICAL JOURNAL OF AUSTRALIA*. The General Secretary reported that that had been done (*THE MEDICAL JOURNAL OF AUSTRALIA*, July 5, 1958, page 20).

Statistics on Medical and Hospital Benefits.

The General Secretary referred to the copy of the *Bulletin of Statistics of Medical and Hospital Benefits Schemes* for six months ended December 31, 1957, and to a copy of *Statistics of Medical and Hospital Benefit Funds Claims*, both of which had been forwarded by the Director-General of Health. He also referred to a statement made by the Minister for Health in the House of Representatives on March 18, 1958, which contained statistics of hospital and medical benefit organizations.

Printed Account and Receipt Forms for Doctors.

The General Secretary read a letter from the Medical Benefits Fund of Australia, giving details of fraudulent claims that had been made on benefit funds by contributors using ordinary receipt forms obtained from stationers, and requesting that medical practitioners have account and receipt forms specially printed for their own individual use. The Federal Council resolved that the request of the Medical

Benefits Fund of Australia Limited be approved and that medical practitioners be recommended to adopt an accounting system involving the use of printed account and receipt forms.

Hospital Benefits for Mothers and Babies.

As the result of a discussion and resolution at the meeting of the Federal Council in February, 1958, a recommendation was sent to the Minister for Health that where a nursing mother was hospitalized and a charge was made by the hospital for accommodation for the breast-fed baby, both fund and Commonwealth benefits should be payable in respect of the mother's and the baby's hospital accounts. The General Secretary reported that the Minister, in his reply, had said that the matter had been carefully considered, but it had been decided not to amend the *National Health Act* to provide for the payment of hospital benefits in the circumstances mentioned. The Minister had gone on to state that the provision of hospital benefits had always been dependent upon the patient receiving hospital treatment as defined in the *National Health Act*, and the provision of benefits in respect of hospital accommodation only would be a considerable departure from the principle of the scheme. It was believed that the usual practice of hospitals was not to charge an additional fee for the maintenance of the baby when accommodated with its mother, on the basis that both mother and baby were regarded as one patient. That was a long-established principle and was recognized by the Commonwealth Government in the introduction of the Hospital Benefits Scheme. The Minister's reply was noted.

Private Radiology in Public Hospitals.

The General Secretary referred to a letter from the College of Radiologists of Australasia in which the attention of the Federal Council was drawn to the practice of some public hospitals of doing private and intermediate out-patient radiology in their hospital departments. It stated that the practice was occurring in New South Wales and other States, and the Council of the College accordingly considered that it had become a matter for the Federal Council. The Council of the College had asked its members not to participate in any such practice, which it considered was wrong in principle. The Federal Council considered the correspondence that had resulted from the reference of the letter of the College of Radiologists of Australasia to the Branches, and in particular to a letter from the Victorian Branch referring to and endorsing the request of the College that the Federal Council consider the question of public hospitals providing X-ray services to private out-patients where radiologists were practising privately in the district. The Federal Council resolved to support the view expressed by the College of Radiologists that it was totally opposed to the principle of subsidized public hospitals entering into competition with private radiological practices.

Compulsory Notification of Blindness.

The General Secretary referred to a letter that had been received from the Ophthalmological Society of Australia (B.M.A.), addressed to the Australian National Council for the Blind, in which the Society set out its objections to the proposal for compulsory notification of blindness. The first reason was that the Society considered that, as the proposal was designed to enable benefits to be given to the individual concerned, and was not a proposal of the type which was for the protection of the public generally as with the notification of infectious diseases, the proposal was an unwarranted interference with the freedom of the individual. The second objection arose from the firm belief of the Society that compulsory notification of blindness would, in some cases, tend to discourage persons from seeking medical attention and advice in respect of reduced vision. However, the Society favoured notification of blindness with the consent of the patient, as it considered that great advantages would flow from such a course without the disadvantages referred to. The Society's letter was noted.

Medical Education.

Copies were made available to the members of the Federal Council of the Interim Report on Medical Education of the New South Wales Branch of the British Medical Association. Reference was made to the report of the Advisory Medical Committee appointed by the New South Wales Government to consider the establishment of a second medical school in New South Wales.

Tetanus Injections.

A discussion took place on the possible methods of recording injections when persons were immunized against tetanus. Dr. E. F. Thomson pointed out that there were

four main methods of recording by means of a personal card, a personal identity disk, recording in a central registry, and tattooing. Each method had its disadvantages, and it seemed that the most useful would be some form of card or booklet. However, there was no practical foolproof method.

Vaccination Against Poliomyelitis.

The Federal Council discussed a recommendation of the New South Wales Branch that representations be made to the Minister for Health to have Salk vaccine made available for use by private practitioners. The practical difficulties involved in this were considered, and it was decided to take no action for the present.

PUBLIC RELATIONS.

A letter was received from the Victorian Branch expressing dissatisfaction with a pamphlet produced by *The Australian Women's Weekly* under the sponsorship of the New South Wales Branch, and requesting that the Federal Council take steps to prevent a recurrence of the publication. After discussion it was decided to take no action, other than to thank Dr. Stanley Williams for his criticism of the supplement.

Film on Health Services in New Guinea.

The General Secretary advised that representations had been made to have the work of the thoracic surgical team (Royal North Shore Hospital of Sydney) at present visiting New Guinea incorporated in a film that was being made by the Department of Information on health services in New Guinea.

Canberra Information Services.

The General Secretary reported favourably on the service given by the Canberra Information Services, and it was resolved that the question of the renewal of the agreement with Canberra Information Services as from March 1, 1959, be left in the hands of the Honorary Treasurer and General Secretary.

SPECIAL GROUPS.

Ophthalmological Society of Australia (B.M.A.).

The General Secretary referred to a copy of redrafted rules which had been forwarded by the Ophthalmological Society of Australia (B.M.A.) for the consideration of the Federal Council, and which he had approved as being in accordance with the Council's rules. The General Secretary's action was approved.

COLLEGE OF GENERAL PRACTITIONERS.

At its meeting in February, 1958, the Federal Council received a report of the conference that had taken place of the Royal Australasian College of Surgeons, the Australian Post-Graduate Federation in Medicine, and the College of General Practitioners, under the sponsorship of the Federal Council, to discuss surgical training of general practitioners. The General Secretary referred to a letter that had been received subsequently from the three bodies concerned. The College of General Practitioners had approved of the resolutions adopted by the conference, with one small addendum to clarify the meaning. The Australian Post-Graduate Federation in Medicine had signified its approval of the resolutions, with one amendment to indicate that the arrangement for the training of second-year graduates should be the "endeavour" rather than the "responsibility" of the appropriate post-graduate body in each State. The Council of the Royal Australasian College of Surgeons had received the report without making any decisions. However, it was stated that members of the Council of the College were generally in agreement with the views expressed at the conference, and in particular with those expressed by the President of the College, and by Mr. R. B. Jose. The Council of the College felt that the provision of surgical training for people practising in isolated areas to equip them to undertake emergency surgery was a matter for the post-graduate committees in the various States to arrange.

AUSTRALIAN POST-GRADUATE FEDERATION IN MEDICINE.

The General Secretary reported the receipt of the minutes of the meetings of the Executive Committee and of the general meeting of the Australian Post-Graduate Federation in Medicine. Dr. L. R. Mallen had agreed to act as the Federal Council representative on the Federation.

INCOME TAX AND SOCIAL SERVICES CONTRIBUTION ASSESSMENT ACT.

The General Secretary referred to an analysis of professional incomes extracted from the thirty-fifth report of the Commissioner of Taxation, in which were set out the

number of people in various professional groups in the various income ranges.

The General Secretary also referred to correspondence that had taken place with the College of Pathologists of Australia regarding the exemption from sales tax of equipment used by pathologists.

BRITISH MEDICAL ASSOCIATION.

The General Secretary referred to correspondence that had gone on with the Council of the Parent Body of the British Medical Association with regard to proposals by the latter to raise the overseas subscription rate and to have the subscriptions paid in sterling, and subsequently to impose a surcharge of one guinea, payable in sterling, towards meeting the increased postal charges and other expenses in connexion with production and circulation of the *British Medical Journal*. As the result of correspondence and personal representations the proposals had been withdrawn from the agenda of the Annual Representative Meeting, and the matter was receiving further consideration by the Council of the Parent Body. An alternative suggestion which had been submitted to the Council of the Parent Body with the support of the Branch Councils throughout Australia was that the receipt of the *British Medical Journal* by members of the Association in Australia be not obligatory. The Federal Council resolved that no action be taken in regard to the overseas subscription until a positive proposal was submitted by the Parent Body to the Federal Council.

BRITISH COMMONWEALTH MEDICAL CONFERENCE.

The General Secretary referred to the Fifth British Commonwealth Medical Conference to be held in Edinburgh in July, 1959. He said that the Branches had been asked for recommendations for topics to be considered at the conference.

NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL.

The General Secretary reported that copies of the official reports on the Forty-Second and Forty-Fourth Sessions of the National Health and Medical Research Council had been received from the representative of the Federal Council, Dr. W. F. Simmons. Dr. Simmons had also sent his personal report of the Forty-Fifth Session held in Brisbane in May, 1958. Dr. Simmons was thanked for his report.

COMMONWEALTH HEALTH DEPARTMENT.

Drug Addiction.

At its meeting in February, 1957, the Federal Council approved the principle of compulsory notification of addiction to dangerous drugs, and it also approved the definition of drug addiction set out by the World Health Organization. The General Secretary reported that a letter had been received from Dr. C. E. Cook, of the Commonwealth Department of Health, drawing attention to current problems associated with drug addiction, and recommending that Federal Council again consider approval in all States of the law long applied in Queensland, where a medical practitioner was required to notify the State Health Authority of any disease for which he intended to prescribe narcotic drugs for a period longer than two calendar months. The matter was referred to the Branches, and the views of the Branches were presented to the Federal Council. The Queensland Branch supported Dr. Cook's recommendations. The New South Wales Branch approved of the notification of persons to whom narcotic drugs had been continuously administered for a period of eight weeks, provided that a procedure was adopted similar to that in use in South Australia. The Victorian Branch did not support Dr. Cook's proposals. The South Australian Branch considered there was no need for similar legislation in South Australia, as the position was considered to be satisfactory. The Western Australian Branch left the matter in the hands of its delegates, as did the Tasmanian Branch. After discussion the Federal Council passed a resolution approving of the notification of persons to whom narcotic drugs had been continuously administered for a period of eight weeks provided that a procedure was adopted similar to that in use in South Australia or Queensland.

WORLD MEDICAL ASSOCIATION.

The General Secretary reported that he had received a copy of the minutes of the Thirty-Second Council Meeting of the World Medical Association held in May, 1958. He also referred to the Thirty-Fifth Council Meeting to be held in Sydney from March 25, 1959. It was noted that Dr. L. R. Mallen had been elected Chairman of the Council of the World Medical Association, and the Federal Council offered its congratulations to him on his appointment.

Twelfth General Assembly.

It was reported that the Australian delegation at the Twelfth General Assembly of the World Medical Association held in Copenhagen in August, 1958, had consisted of Dr. L. R. Mallen, Dr. M. E. Chinner, Dr. Elizabeth Bright and Dr. K. J. Friend.

Secretary-General's Newsletters.

The General Secretary reported receipt from the Secretary-General of six newsletters, copies of which had been distributed to Branches and members of Federal Council.

First Decade Report.

The General Secretary advised that he had received from the Secretary-General a number of copies of the First Decade Report of the World Medical Association. A copy was now available at the headquarters of each Branch.

Supporting Committee.

It was reported that the total funds held by the supporting committee were £4730. About £5000 would be required for the expenses of the W.M.A. Council Meeting in 1959.

Medical Education.

Reference was made to the Second World Conference on Medical Education to be held in Chicago in August and September, 1959. Australian representatives would include Dr. V. M. Coppleston, Professor J. H. Tyrer and Professor Shedden Adam. The representatives of the Federal Council would be Dr. L. R. Mallen and Dr. J. G. Hunter.

Hospitals.

The General Secretary referred to a comprehensive questionnaire that had been received from the Secretary-General relating to the organization and functioning and views of the medical profession on hospitals. The questionnaire was being completed after consultation with the Branches.

Handbook of Meetings.

The General Secretary reported that he had received from the Secretary-General a copy of the handbook of meetings. An extract had been forwarded to the Branches and to members of the Federal Council covering the procedure during deliberative council sessions.

Pharmaceutical Preparations.

The General Secretary reported that he had received from the Secretary-General of the World Medical Association a copy of a document received from the World Health Organization on international non-proprietary names for pharmaceutical preparations; the Federal Council had been invited to comment thereon. He had referred the matter to Professor R. H. Thorp and to Dr. Byron Stanton, who had both approved the list of names, and it had been returned to the World Medical Association.

Drugs Producing Addiction.

The General Secretary referred to a letter from the Secretary-General of the World Medical Association drawing attention to the excellent work done and the recommendations adopted by the World Health Organization Expert Committee on drugs producing addiction at its meeting in Switzerland in January, 1958.

Central Repository for Medical Credentials.

The General Secretary referred to a letter from the Secretary-General of the World Medical Association, advising that the services of the Central Repository for Medical Credentials was now available to every qualified doctor of medicine and forwarding instructions and regulations in regard thereto. He said that the information had been passed on to the Branches. This matter was referred to in further detail in the issue of the Journal for July 19, 1958.

Pamphlets Issued by the American Medical Association.

The General Secretary drew attention to pamphlets issued by the American Medical Association and forwarded by the World Medical Association. The titles of the pamphlets were "The Fifth Freedom" and "Do You Like to Make Decisions?". Additional copies of these were available through the World Medical Association Secretariat. It was decided that further copies should be obtained.

Social Services in Australia.

The General Secretary, Dr. J. G. Hunter, in his capacity as Secretary for Australasia for the World Medical Association, had prepared and forwarded a report on the national health aspects of social services in Australia. A copy of the report was distributed to members of the Federal Council.

Occupational Health Service Committee.

The General Secretary reported that he had received from Dr. Gordon C. Smith his comments on the report of the committee on health services of the International Labour Conference, Forty-Second Session, on "Organization of Occupational Health Services in Places of Employment", which had been submitted to him by the chairman of the Occupational Health Committee of the World Medical Association. The Federal Council approved Dr. Gordon Smith's comments.

REPATRIATION DEPARTMENT.

Medical Benefits for Widows, Widowed Mothers and Orphans of Deceased Servicemen.

At its meeting in February, 1958, Federal Council gave consideration to implementing its resolution adopted in August, 1957, namely:

That the Repatriation Department be asked to terminate the agreement for the payment on a per-capita basis of medical practitioners providing medical services to war widows and their dependants, and requested to substitute in lieu thereof a fee-for-service method of payment.

However, before the completion of the debate, the Federal Council had resolved that the Branches be asked whether, in the event of the present capitation system for the payment of medical services to widows, widowed mothers and orphans of deceased ex-servicemen being terminated, and in the event of failure to obtain an increase in the present rate of 12s. 6d. per service to local medical officers, they would be agreeable to the Federal Council entering into an agreement with the Repatriation Department for a fee-for-service arrangement for the care of widows, widowed mothers and orphans of deceased ex-servicemen at the rate of 12s. 6d. The Federal Council's action was reported to the Branches for their comments.

Subsequently a letter was received from the chairman of the Repatriation Commission confirming the fact that the department was prepared to institute a fee-for-service payment to medical practitioners providing treatment for widows, children and other dependants of deceased ex-servicemen at the rates of 13s. per surgery consultation and 15s. per domiciliary visit. The Branches were then asked for their views on whether the Federal Council should terminate the existing per-capita agreement and enter into a new fee-for-service agreement at the increased rates offered by the Commission. After consideration of the views of the Branches the Federal Council decided that notice should be given to the Repatriation Department of termination of the existing agreement. It was further resolved that the matter of the provision of medical services to the widows, widowed mothers and orphans of deceased ex-servicemen to be left in the hands of the committee consisting of the President, Dr. H. C. Colville, and Dr. J. G. Johnstone.

Local Medical Officers.

The General Secretary reported that, as a result of the further approach made to the Repatriation Department in an attempt to obtain an increase in the amounts of fees payable to local medical officers, the chairman of the Repatriation Commission had advised that the fees had been increased to 13s. for surgery consultations and 15s. for domiciliary visits. The rates would apply for three years as from July 1, 1958. The increase in rates was noted.

As the result of a decision of the Federal Council at its meeting in February, 1958, a conference was held between representatives of the Repatriation Commission and the Federal Council on June 18, 1958, to discuss the conditions of service of local medical officers. Subsequently a report of the conference, a further letter from the chairman of the Repatriation Commission, and a copy of a draft of the conditions of the appointment of local medical officers were circulated. The Federal Council decided to approve the conditions of appointment of local medical officers as embodied in the new agreement submitted by the Repatriation Department.

At the conference between representatives of the Repatriation Commission and the Federal Council consideration was also given to the proposed voucher system for payment of services of local medical officers. Subsequently a letter was

received from the chairman of the Repatriation Commission agreeing to all the suggestions made at the conference with the exception of the omission of the signature of the medical practitioner. The Federal Council agreed to approve the voucher system as submitted by the Repatriation Department.

The General Secretary reported that, as a result of the representations made by the Federal Council, the Repatriation Commission had agreed to increase to £1 11s. 6d. the fee for the completion of forms K-K, M.P.B. 280 and M.F. 9a (revised) 1957.

Conditions of Service of Visiting Medical Officers.

The President reported that the proposed conference with the Minister relating to the conditions of service of visiting medical officers at Repatriation Department hospitals had not yet been held.

British Ministry of Pensions and National Insurance: Fees for Report on Clinical Notes.

The General Secretary reported that a letter had been received from the New South Wales Branch advising that the fee to practitioners for furnishing the Repatriation Department with a copy of the clinical notes on a patient who was the subject of a claim for benefits from the British Ministry of Pensions and National Insurance was 9s. 4d. The Branch requested that Federal Council should submit to the Repatriation Department that the fee was inadequate.

The letter from the New South Wales Branch was circulated to the other Branches, which all agreed that the fee payable was inadequate. The Federal Council expressed the opinion that the fee was inadequate, and submitted that it should be one guinea. The question was to be referred to the Repatriation Department.

The General Secretary reported that a letter had been received from the Tasmanian Branch asking the Federal Council to take up with the Repatriation Department the manner of payment to specialists when repatriation patients failed to keep appointments at the practitioners' surgeries. The question had been referred to the chairman of the Repatriation Commission, who had advised that, in those cases in which an appointment had been made for a specialist to attend at other than his consulting rooms and the patient failed to attend, it was the Commission's policy to pay the full fee on the grounds that a service had been rendered. On the other hand, the Commission's general policy was not to pay a fee to specialists for unkept appointments at the specialists' rooms. That policy was based on the requirements of the *Audit Act*. The chairman had pointed out that every precaution was taken to impress on patients the need for their attendance at the stated time, and they were requested to advise the Deputy Commissioner immediately if they were unable to attend in order that the specialist might be advised and a further appointment made. The chairman's reply was noted.

Radiological Services in Country Centres.

The Queensland Branch forwarded a copy of correspondence received from a radiologist in a country centre, in which he was advised that the Repatriation Commission would in future use the facilities provided in country public hospitals in Queensland for taking normal routine X-ray films of department patients, and requested the Federal Council to make representations to the Repatriation Department in the matter. It appeared that the practice was confined to Queensland. Subsequently the Queensland Branch forwarded correspondence with the Repatriation Department in which the department had advised that the matter had been reconsidered. It had been decided that, in the interests of patients in country areas where X-ray examination carried out locally met the needs of a patient under treatment or investigation, the services of a radiologist whose qualifications were in that specialty were recognized by the department would be generally used. The matter was noted.

DEPARTMENT OF SOCIAL SERVICES.

Fees for Examination of Patients.

At its meeting in August, 1956, the Federal Council decided to seek from the Department of Social Services an increase from £1 11s. 6d. to £2 2s. in the fee for examination of pensioners. After considerable correspondence the department had advised that the Treasury did not consider that the proposed increase was justified.

At its meeting in August, 1957, the Federal Council decided to advise the Department of Social Services that it considered that the psychiatrist's fee for consultation and report

on invalid pensioners should be £5 5s. The General Secretary reported that the department had agreed to increase the fee to £4 4s. for the first hour and £1 1s. for each additional half-hour that the examination might require.

It was noted that the representations of the Federal Council for an increase in fees payable to general practitioners for services rendered on behalf of the Department of Social Services were still under consideration.

Review of Pensioner's Entitlement.

At a meeting in February, 1958, the Federal Council expressed a view that an attempt should be made to reduce the number of invalid pensioners by the following means: (a) regular annual review by a specially employed medical officer interviewing and examining pensioners in collaboration with local medical officers; (b) rehabilitation services to enable training and suitable employment of invalid pensioners where indicated. The matter was taken up by the Department of Social Services, and a reply was received from the Director-General of Social Services. He pointed out that, whilst the question of permanent incapacity for work was primarily one for medical opinion, the decision of whether a pension should be granted rested with the Director-General or the Director of Social Services. In arriving at a decision he was necessarily guided largely by the medical evidence, but full consideration was given to all other relevant factors. In some cases that might result in the refusal of a pension, notwithstanding a favourable medical report from the Medical Commonwealth Medical Referee. An invalid pension was not necessarily a permanent grant; it was subject to review, which, unless the invalidity was manifest, included medical reexamination. The Director-General stated that a survey of invalid pensioners made by a Commonwealth Health Department medical officer several years previously had revealed comparatively few cases in which there was any material doubt as to the pensioner's legibility. In July, 1953, the Government of the day, mainly on the grounds of the extra expense involved, had rejected a proposal that medical appeal boards be appointed in the various States. If an invalid pensioner secured employment he was required by the *Social Services Act* to notify the department of the fact. With regard to rehabilitation the Director-General pointed out that it was already the procedure to refer every claim for invalid pension to the Commonwealth Rehabilitation Service for an assessment of the claimant's rehabilitation prospects. Moreover, since the commencement of the Commonwealth Rehabilitation Scheme, all existing invalid pension cases had been reviewed and given a similar assessment. Wherever there were good prospects of successful rehabilitation, the full resources of the Commonwealth Rehabilitation Service were applied to that end at the earliest possible juncture. The Director-General concluded that, as adequate steps were already being taken to insure that invalid pensions were paid only to those who remained qualified for them, and as the maximum possible action was already being taken by the department towards the rehabilitation of invalid pensioners for the remedial disability, there would be no justification for further reviews by specially employed medical officers. The reply was noted.

REHABILITATION.

At its meeting in February, 1958, the Federal Council accepted the proposal of the Director-General of Social Services to invite a representative of each Branch to attend meetings of the standing Departmental Rehabilitation Committee to discuss matters which might be causing the Association concern or in respect of which improvements might be effected. The General Secretary advised that the Federal Council's decision was conveyed to the Director-General of Social Services, who, in reply, had stated that he had advised the Director of Social Services in each State that a representative of the local Branch Council of the British Medical Association should be invited to discuss matters regularly with members of the Rehabilitation Standing Committee. The Director-General had said that no doubt the nominee of the Branch Council would report through the local Branch Council on matters which were discussed from time to time, but he (the Director-General) would also arrange for general reports to be sent from his administration to the Federal Council, and where necessary particular matters to be drawn to the notice of the Federal Council.

At its meeting in February, 1958, the Federal Council had also decided to request the Prime Minister to receive a deputation regarding the financing and development of rehabilitation services within the Commonwealth, and asked Dr. C. W. Anderson, Dr. A. E. Lee and the General Secretary

to prepare the material for submission to the Prime Minister. Subsequently, as the result of further consideration, a report had been prepared by the committee appointed by the Federal Council, and submitted to the Minister for Health, the Minister for Social Services, and the Minister for Labour and National Service, with the request that they bring the submissions before the Cabinet at their earliest convenience. The Federal Council expressed its thanks to Dr. Anderson, Dr. Lee and the General Secretary for the preparation of the report.

FEDERAL COUNCIL MEDICAL MONOGRAPH FUND.

The Honorary Treasurer presented the financial statement of the Federal Council Medical Monograph Fund for the period ended August 31, 1958. The total standing to the credit of the fund was £2205 16s. 1d.

An inquiry was received from a doctor with regard to a contribution towards the costs of preparing blocks to be used in the publication of an article in an overseas journal. It was decided that that did not come within the scope of the fund.

PAN-PACIFIC REHABILITATION CONFERENCE.

Reference was made to the Pan-Pacific Rehabilitation Conference to be held in Sydney from November 10 to 14, 1958. A number of suggestions were received from the Branches regarding items for the agenda of the conference.

NATIONAL RADIATION ADVISORY COMMITTEE.

Reference was made to the Interim Report on the Assessment of Some Radiation Problems forwarded to the Prime Minister by the National Radiation Advisory Committee in July, 1958. A letter was received from the South Australian Branch protesting against the action of the Government in releasing the report to the Press before its contents were known to members of the medical profession. The subject was discussed at length, and it was finally decided that the Federal Council should protest to the Minister for Health in the terms of the South Australian Branch letter. It was also considered desirable that the Federal Council should have a statement prepared on the effects of radiation, and it was decided that the President should approach the Director-General of Medical Services to obtain information for that purpose.

COMPULSORY APPENDICECTOMY ON MEDICAL OFFICERS OF ANTARCTIC DIVISION.

A letter received from the Queensland Branch referred to the notice that medical officers to accompany the 1959 expedition to Wilkes and Macquarie Islands must undergo an appendicectomy before embarkation, and requested that Federal Council make representations to limit eligibility to those whose appendices had been removed at least twelve months prior to embarkation. In the discussion it was pointed out that the matter had been considered by the Federal Council in 1956, and at that time it had been decided to take no action. The Federal Council decided to adhere to the previous decision.

AUSTRALIAN SOCIAL WELFARE COUNCIL.

The General Secretary referred to the work of the Australian Social Welfare Council, of which the Federal Council was a member. The annual subscription for 1958 was due, and it was decided that the Federal Council's contribution should be £100. The General Secretary, Dr. J. G. Hunter, was appointed representative of the Federal Council on the Australian Social Welfare Council for 1958-1959, and also representative of the Federal Council on the Planning Committee for the First Australian National Conference of the Australian Social Welfare Council to be held in August, 1959.

DATE AND PLACE OF NEXT MEETING.

It was resolved that the next ordinary meeting be held in Sydney, and that the date be left in the hands of the President.

VOTES OF THANKS.

The thanks of the Federal Council were extended to the Council of the Victorian Branch for its hospitality and for the use of its offices, and to Dr. H. C. Colville, Dr. J. G. Johnstone and Dr. T. G. Swinburne for their hospitality. The thanks of the meeting were extended to the President, Dr. H. C. Colville, for presiding, and to Dr. J. G. Hunter, Dr. A. McNeil and Miss H. Cameron for their services during the meeting.

World Medical Association.

EFFECTS OF NUCLEAR RADIATION.

The following statement has been received from the World Medical Association.

The General Assembly of the World Medical Association was the first group of doctors to consider the biological effects of nuclear radiation after the issue of the report of the United Nations Scientific Committee.

At the request of many of its 55 member medical associations, the World Medical Association had initiated a campaign designed to keep the medical profession in every country fully informed on the effects of nuclear radiation. One of its first actions in this campaign was in securing Dr. Louis M. Orr, of Orlando, Florida (U.S.A.), Consultant to the Institute of Nuclear Studies, Oak Ridge, Tennessee, to address the twelfth General Assembly of the Association held in August, 1958, on the subject "The Biological Effects of Nuclear Radiation".

Dr. Orr prepared his address and was in Denmark when the long-awaited report of the United Nations was made public.

Dr. Orr reported:

It is known that radiation can be dangerous, but fire can be dangerous also. It is a matter of control. It is a fact that for centuries mankind has lived with an amount of radiation some thirty times greater than the fall-out to this date from nuclear tests. It is also a fact that modern man has received a great deal more radiation over his entire body from X-ray and fluoroscopic examination than from nuclear fall-out.

In the medical profession it is known that radiation is an effective treatment for certain diseases and a necessary accompaniment of important diagnostic procedures. It cannot be discontinued, nor should it be indicted indiscriminately. It is necessary to evaluate potential dangers against possible benefits.

The U.N. Report states that "Some hazards are implicit in almost all technological advances", but radiation exposure in X-ray diagnosis and treatment, as well as in research and industry, is "for the benefit of mankind and can be controlled". In this respect the committee drew a sharp distinction between hazards undertaken voluntarily and hazards imposed on all the peoples of the world without their consent.

Dr. Orr discussed the hazards of radiation fall-out in general, including the genetic effects of strontium 90, and compared the amount of radiation to which man has been subjected from natural sources to that from tests, and what would be the probable effects if tests were continued either at the present rate or at the highest rate of a few years ago. He noted that "the 30 year dose to the gonads received by the average person in the United States of America is estimated to be (a) from background radiation—about 4.3 roentgens, (b) from X-ray and fluoroscopy—about 3 roentgens, (c) from nuclear weapons testing if continued at the rate of the last five years—would give a probable dose of only 0.1 of one roentgen. If nuclear testing were continued at the rate of the two most active years the possible exposure of 30 years would be only about 0.2 of one roentgen".

There was substantial agreement between this statement made by Dr. Orr and the report issued by the United Nations.

Dr. Orr warned governments making nuclear tests to take every possible precaution. He was of the opinion that while there should be no indiscriminate testing of atomic devices, especially of thermo-nuclear weapons, neither should there be discontinuance of properly controlled testing that could contribute to knowledge that would be beneficial to all people in the fields of medicine, mining, chemistry, power generation and agriculture. He stated that some risk was justified, though every precaution should be taken to minimize that risk.

The doctors of the world have become so concerned about this whole problem and the hysteria which has developed chiefly from ignorance that they asked the World Medical Association to obtain information which could be distributed to the medical profession and through it to the people of the world.

A year ago, the United Nations informed the World Medical Association that it could not supply it with any advance information on this subject. Hence, the World

Medical Association turned to areas which had information and were willing to release it for the mental and physical well-being of mankind. Dr. Orr was selected to speak on the subject of biological effects of nuclear radiation before the twelfth General Assembly of the World Medical Association because of his consultant status at the Oak Ridge Institute and because he came from a country where the latest research information could be freely obtained.

The World Medical Association notes with justifiable pride that it received information prepared prior to the issue of the Report of the United Nations Scientific Committee and without its contents being available to the speaker, and that the facts it received are not controverted by the U.N. Report.

However, the World Medical Association is of the opinion that there should be closer cooperation between international organizations having the health of the people of the world as one of their objectives. The public is gravely concerned about events which may affect their health and longevity. They turn to their doctors for information on these subjects. The doctors must be kept informed of the most advanced scientific research findings in order to provide their patients with the true facts. The World Medical Association has pledged itself to continue its activity in supplying the information that the doctors of the world need "to assist all peoples of the world to attain the highest possible level of health" and "to promote world peace".

Obituary.

DENIS JOSEPH GLISSAN.

We are indebted to Dr. LENNOX TEECE for the following account of the career of the late Dr. Denis Joseph Glissan.

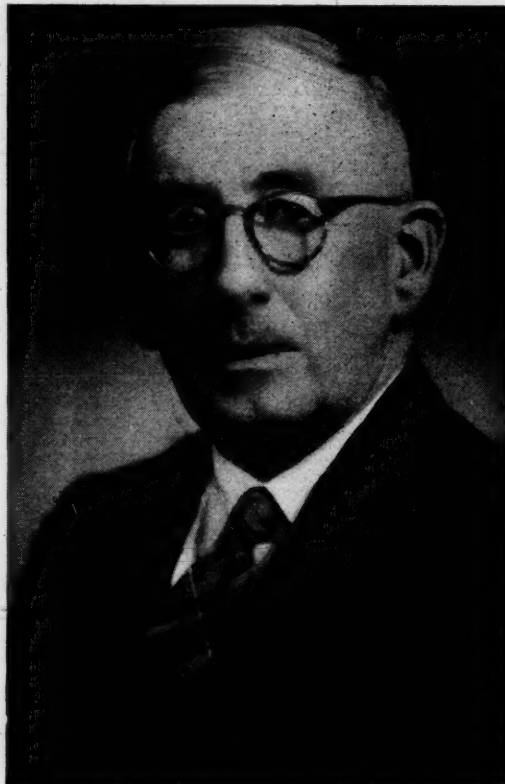
The death of Denis Glissan on May 19, 1958, marks the passage of one of the pioneers of orthopaedic surgery in Australia. Prior to the first World War orthopaedic surgery was indeed a neglected specialty in this country. There was not one Australian-born trained orthopaedic surgeon in practice. In Sydney there was one practising orthopaedic specialist, but he was a German. There were several men who took more than a passing interest in this branch of surgery. In Sydney, Gordon Craig and Robert Wade both did an appreciable amount of orthopaedics, but to them it was only one phase in their interest in the whole field of surgery. In Melbourne, Kent Hughes espoused a curious combination of ear, nose and throat surgery and orthopaedics. It was left to the first World War to awaken a real interest in orthopaedic surgery in Australia, and the first men to devote their entire professional careers to this specialty all had their primary training during the first World War, and all of them were disciples of the late Sir Robert Jones.

Denis Glissan was born on June 3, 1889, and was educated at Riverview and Sydney Grammar School. After graduation he was for a year a resident medical officer at Goulburn Hospital. After leaving the hospital he was for a short time an assistant in private practice in that town. He was never quite happy in the turmoil of a country general practice. The war came and he enlisted in July, 1915, and gave four years' service in Gallipoli, Sinai, France and England. He was one of a small group of men selected from the A.A.M.C. to undergo orthopaedic training in England, and he learnt his first principles of orthopaedic surgery at Alder Hey Military Hospital in Liverpool. He returned to Australia in 1919 and was one of the first three trained orthopaedic men to commence practice in Australia after the first World War. He set up practice in Sydney and carried on till December, 1952, when he suffered a stroke which marked the termination of his professional life. A hemiplegia made him an invalid until his death.

He was on the honorary staff of the Royal Prince Alfred Hospital and of St. Vincent's Hospital for over twenty years. At St. Vincent's Hospital he was for the whole of his term of service senior honorary medical officer of the orthopaedic department. He built up the department at that hospital from nothing to its present pitch of efficiency, and many a young man and, indeed, several of the present honorary staff owe him a debt of gratitude for their early training in the first principles of orthopaedics. In the second World War, as soon as the 113th Military Hospital opened its doors at Concord he was the first orthopaedic surgeon to be appointed to its visiting staff, and he gave five years of unremitting work to this hospital. He was a foundation Fellow of the Royal Australasian College of Surgeons and

was one of the founders of the Australian Orthopaedic Association, of whom but few remain today. He was for two years President of the Orthopaedic Association and the most regular attendant at all its meetings. Perhaps the body that owes him the greatest debt of gratitude is the Australian Occupational Therapy Association. He was one of its founders and for some years its president, and this at a time when occupational therapy was unthought of. His tireless energy and enthusiasm did much to establish the association on its present firm footing.

As a surgeon he was conservative and a perfectionist. He was not to be led up the garden path by some widely acclaimed new procedure. Everything had to be tried and tested and he was never led astray by ill-judged enthusiasm. It was his meticulous attention to detail that was largely responsible for the high standing of his surgical results. Time meant nothing to him. At hospital his operation list



would be completed no matter what the hour, and at the end of a long afternoon in the operating theatre he would be the freshest person of the whole theatre staff. He had no mercy for laziness and inefficiency or for carelessness, and was not slow to speak his mind when he encountered these qualities. He devised an effective operation for extensor contraction of the toes and saw it widely adopted throughout the orthopaedic world. He set the standard of orthopaedic work at St. Vincent's Hospital on a firm, rational basis, avoiding the showy and the ephemeral, and it is to some considerable extent due to him that the specialty of orthopaedic surgery in Australia today is accorded a high standard of public and professional respect. A man of quiet and unassuming manners, his friends were many and of long standing, yet in addition he enjoyed the respect of his younger colleagues.

To his widow and lifelong companion (there were no children) goes the sympathy of all his professional brethren who look upon him as a worthy pioneer of this young specialty.

Dr. ALAN DWYER writes: When Denis Glissan was forced to retire from practice, orthopaedic surgery in this country lost not only one of its pioneers, but also one of its most original minds. Very few of us do little more than repeat the things we have been taught, and make our reputations

by the careful application of procedures and principles established overseas. Not so "Dinny" Glissan. Very few men have had as deep an understanding of the form and function of the human foot, and it is a great pity that his illness prevented him writing an intended monograph on this subject. It would have been a fitting background to the notable surgical contributions he made in this field. Although it is for this work that he will be mainly remembered, his originality in outlook and technique showed itself in many ways. He was actually carrying out a highly original solution to the problem of an old, completely avulsed capsulotendinous cuff of the shoulder when stricken by his crippling illness. This patient later appeared before a meeting of the College of Surgeons, with a beautiful functional result from a condition which is often regarded as very difficult or even impossible. "Dinny" was the first orthopaedic surgeon to realize that the radio-translucency and malleability of aluminium made it a very useful splinting material, and over the years he devised many ingenious ways of using it. I believe he did try to enrol at the Technical College, in order to enhance his skill with this and various other materials, but lacked the necessary union card, and was not accepted as a student. However, he seldom lost an opportunity of picking up information from any skilled tradesman, and in time became quite an authority on the use and care of wood-working and metal-working hand tools. A natural teacher, "Dinny" Glissan left his stamp on generations of house surgeons, no matter what field of medicine they later pursued. Irascible by temperament, and yet patient in demonstration, he impressed on all, by his example and by his insistence, the importance of correct and methodical clinical work, operative technique and post-operative care, to the smallest details of nursing. A term as his registrar came to be the most eagerly sought of all training posts. The end of his life was saddened by years of confinement to a bed and a wheel-chair. Only those who knew his restless temperament fully realized the frustration he suffered, and the genuine fortitude he displayed. His wife was a tower of quiet strength throughout his life, and especially during his illness.

DR. DOUGLAS MILLER writes: It is sometimes wistfully regretted that the colourful characters who make food for reminiscence in the elders seem to have passed from our midst. I think, however, that while human nature remains, and the profession of medicine nourishes individuality, the quality of colour will not be lost entirely to this profession. Remembering Denis Glissan gives me strength in this belief. Here indeed was a character and the source of many a story. He was a pioneer, and pioneers are not made of weak or pliable matter. He forced in no small measure on the profession, and on the community generally, an acceptance of the fact that his specialty of orthopaedics was something over and above the calling of general surgery. He insisted that it entailed a philosophy and a trained outlook transcending a mere knowledge of the mechanics of operative techniques. Moreover, he imposed this discipline of thought in a milieu of possessive general surgeons in no way yielding or sympathetic. His patience, persistence and unrelenting attention to detail won the day for him. So it was that in two of our teaching hospitals he grew to the stature of their surgical giants. A man can push forward a frontier only by converting or subjecting his opponents. To Glissan anybody offering resistance or obstruction had to be mercilessly terrorized and beaten down, though possibly received later as an ardent convert or disciple. It was this capacity of the man to force his opinion and his method that gave rise to many amusing stories which at the time were quite devastating to the objects of the assault. For he could turn the English tongue to magnificent use in invective and withering sarcasm.

But this warrior in battle, who was known to many in no other guise, had indeed a softer side. The elements were gently mixed in him. He was a fiercely loyal friend, a charming host, a keen lover of nature and particularly of its small animals and birds. He loathed the vulgar and ostentatious. He despised big business, and scorned especially all that importance surrounding the "sport of kings". He was surely at his most lovable caring for some little cripple, spoiling his own little silky dog, or wandering light-heartedly along a trout stream in the snowy mountains. There indeed he delighted in the trees, the birds and the flowers; more, I fancy, than in the occasional trout that was rash enough to expose itself to the most carefully thought-out system of having itself caught. It was, too, a carefully thought-out system, for days of happy studied preparation preceded these holidays. Then he loved simple humorous things, like Belloc's "Cautionary Tales", which he could recite by the hour, and chuckle over their drolleries. Even in the throes of the cruel affliction that deprived him of so much he could still sometimes recite with relish these cautionary tales.

His was a life dedicated, if ever one was, to the purest philosophy of his profession. Perfection of work was his guiding star, and to this he would sacrifice ruthlessly that mass of work so often called success and its resulting monetary gains. Came the day when this attitude reaped an almost complete sacrifice. Now he has gone and has left behind him an imposing record of achievement in the work he did and the organization he inspired. Like all great influences, his influence stretches beyond the limits of recognition, for throughout this land many a doctor struggles to tie the correct knot, or sling a splint with meticulous care, or regards the welfare of the patient as transcending all other considerations because directly or indirectly he has inherited a stern self-discipline from this master. Those who were his pupils have a great heritage, and his friends many a blessed memory.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

QUACKERY IN VICTORIA.¹

[From the *Australasian Medical Gazette*, April, 1882.]

CHARLATANISM very much flourishes in Victoria. Ever since it was judicially declared that the Medical Act was a dead letter, quacks have sprung up in all directions. One of the latest of these calls himself a "Medical Clairvoyant and Herbalist". Another describes himself as a psychopathist, and publishes long lists of "cures". Another cures deafness of all kinds for sixpence. Another has an infallible specific for "Rheumatism, white swellings, ulcerated throats, sore eyes, neuralgia, bad breasts, gravel and morbid fancies". The red-flannel man is not in Melbourne, but a great many people are understood to be waiting for him. The Marchioness of Normandy having given her patronage to the homeopathic bazaar, it is quite to be expected that charlatanism should thrive, and, of course, this recognition is made the most of.

Correspondence.

FUMIGATION WITH DICHLORETHYL ETHER AND CHLORDANE.

SIR: In the issue of September 20 Mr. F. J. Collings challenged the conclusions of our investigations carried out in connexion with "Fumigation with Dichlorethyl Ether and Chlordane" (*M. J. AUSTRALIA*, August 23, 1958). We cannot agree with Mr. F. J. Collings's conclusion that "... the majority were apparently the victims of minute traces of a vaporized chlorinated organic compound, freely mixed with oxygen, exposed to high temperatures, whilst passing through gas burners". The question of formation of phosgene was considered early in the investigation, but was not thought to have any toxicological importance in this case. The amount of phosgene formation from contact of chlorinated hydrocarbons with hot surfaces is variable and dependent on temperature. Experimental work (Little²) carried out in England with various chlorinated solvents in contact with surfaces at a range of temperatures revealed relatively little formation proportionately up to temperatures of 800°C. For example, methylene chloride at 5000 parts per million yielded 20 parts per million phosgene at 800°C., chloroform at 4000 p.p.m. yielded 130 p.p.m. phosgene at 600°C., carbon tetrachloride at 4000 p.p.m. yielded 25 p.p.m. phosgene at 600°C., trichloroethylene at 3000 p.p.m. yielded 30 p.p.m. phosgene at 600°C., dichloroethylene at 6000 p.p.m. yielded 20 p.p.m. phosgene at 700°C. and so on. The temperature of the incandescent gas heaters is about 850°C. No similar work has been done on dichloroethyl ether, but it is not anticipated that any higher figures would pertain. With

¹ From the original in the Mitchell Library, Sydney.

² *Brit. J. Indust. Med.*, 1955, 12: 304.

the low order of concentrations of dichloroethyl ether initially, phosgene would not be formed in sufficient amount to cause trouble.

The medical histories of the affected people were not consistent with poisoning from either phosgene or hydrochloric acid, the latter also being a breakdown product in the reaction suggested by Mr. Collings.

Yours, etc.,

ALAN BELL,
A. T. JONES.

N.S.W. Department of Public Health,
Division of Industrial Hygiene,
86-88 George Street North,
Sydney.
September 29, 1958.

Royal Australasian College of Surgeons.

FINAL FELLOWSHIP EXAMINATION.

A MEETING of the Court of Examiners for the final examination for fellowship of the College in general surgery only will be held in Sydney, commencing on Friday, May 1, 1959. Candidates who desire to present themselves at this examination should apply on the prescribed form to the Censor-in-Chief for permission to do so before March 19, 1959. The appropriate forms are available from the Examination Secretary, Royal Australasian College of Surgeons, Spring Street, Melbourne, C.I.

Candidates who have already been approved by the Censor-in-Chief in general surgery, but who have not yet presented themselves for the examination, may present for this examination, provided they notify the Examination Secretary of their intention to do so by March 19, 1959. It is stressed that entries close on this day and late entries cannot be accepted. The examination fee is £26 5s., plus exchange for cheques drawn on banks outside Melbourne, and must be paid to the Examination Secretary by March 19, 1959. This examination will be conducted in general surgery only.

At its meeting held on June 20, 1958, the Council of the College decided that candidates who possessed the fellowship of a body with which this College has reciprocity of primary examinations shall be exempted from the written part of the examination, provided that there is no relaxation of apprenticeship prerequisites.

FACULTY OF ANÆSTHETISTS.

Final Fellowship Examination.

A MEETING of the Court of Examiners for the final examination for fellowship of the Faculty of Anæsthetists of the Royal Australasian College of Surgeons will be held in Sydney, commencing on Friday, May 1, 1959. Candidates who desire to present themselves at this examination should apply, on the prescribed form, to the Assessor for permission to do so before March 19, 1959. The appropriate forms are available from the Examination Secretary of the faculty, Royal Australasian College of Surgeons, Spring Street, Melbourne, C.I. It is emphasized that entries close on March 19, 1959, and late entries cannot be accepted.

The examination fee is £26 5s., Australian currency, plus exchange for cheques drawn on banks outside Melbourne. Candidates from New Zealand desirous of entering should forward their remittance by bank draft on Melbourne in favour of the Royal Australasian College of Surgeons Trust Account. The examination fee must be paid to the Examination Secretary by March 19, 1959.

Subjects for the final examination are: (a) anæsthesia and analgesia, including pre-operative and post-operative care; (b) medicine and surgery; (c) the application of the basic sciences, including chemistry and physics, to the speciality of anæsthetics. The examination in each case is partly written, partly oral and partly clinical (including the examination of patients).

Graduates of an approved medical school who have obtained, prior to December 31, 1957, the first part of the diploma in anæsthesia of an approved medical school or college, may, at the discretion of the Board, be allowed to present themselves for the final examination of the faculty, provided they have fulfilled all other regulations.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Week-End Conference at Cooma.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that, in conjunction with the Far South Coast and Tablelands Medical Association, a post-graduate conference will be held at the Cooma District Hospital on Saturday and Sunday, November 15 and 16, 1958. The programme is as follows:

Saturday, November 15: 2.15 p.m., "Varicose Veins" (with discussion of cases), Professor J. Loewenthal; 3.30 p.m., "Recent Advances in Therapeutics", Dr. K. S. Harrison.

Sunday, November 16: 9.30 a.m., "The Hazards of Modern Drug Therapy", Dr. E. J. C. Molesworth; 10.30 a.m., "Master Surgeons", Professor J. Loewenthal; 11.45 a.m., "Current Topics in Endocrinology", Dr. K. S. Harrison; 2.30 p.m., "The Use and Abuse of Cortico-Steroids", Dr. E. J. C. Molesworth.

Information.

The fee for attendance at this course is £3 3s., and those wishing to attend are requested to notify Dr. G. P. Charles, Honorary Secretary, Far South Coast and Tablelands Medical Association, Medical Centre, Snowy Mountains Authority, Cooma North, as soon as possible. Telephone: Cooma 710, extension 2426.

THE MELBOURNE MEDICAL POST-GRADUATE COMMITTEE.

PROGRAMME FOR NOVEMBER AND DECEMBER, 1958.

Country Courses.

Bendigo.

On Saturday, November 15, at the Northern District School of Nursing, a symposium will be held on the diagnosis and treatment of liver disease. The programme will be as follows: 2 p.m., lecture by Dr. Ian McKay; 2.45 p.m., lecture by Dr. W. E. King; 3.30 p.m., lecture by Mr. J. Grayton Brown; 4.45 p.m., quiz, with the lecturers forming a panel. Dinner will be held at the Shamrock Hotel at 7 p.m., to which members and their wives are invited. The Honorary Secretary for the course and dinner is Dr. M. Clark, 98 Mitchell Street, Bendigo.

Mooroopna.

On Saturday, November 22, a course will be held at the Base Hospital as follows: 2.30 p.m., "Common Neurological Problems", Dr. J. Game; 4.30 p.m., "Dermatological Problems", Dr. I. O. Stahle. Dr. B. R. Schloeffel, Maud Street, is the local secretary.

Port Fairy.

On Saturday, November 22, a course will be held as follows: 3.45 p.m., "Leukemia", Dr. Ivan Epstein; 5.15 p.m., "Infertility", Dr. Gordon Ley. Dr. R. R. Sobey, 6 Spence Street, Warrnambool, is the local secretary.

Ballarat.

On Saturday, November 27, at Craig's Hotel at 8.15 p.m., Dr. V. L. Collins will lecture on "A Paediatrician's Approach to Behaviour Problems". Dr. N. F. Pescott, 626 Sturt Street, Ballarat, is the local secretary.

Fees for the above courses are at the rate of 15s. per lecture, but those who have paid an annual subscription to the Committee are invited without further charge.

Flinders Naval Depot.

On Wednesday, November 12, at 2.30 p.m., Dr. Bryan Keon-Cohen will give a talk on orthopaedics. This meeting is held by arrangement with the Royal Australian Navy.

Overseas Lecturers.

Dr. Marjory Warren, consultant physician of the geriatric unit at the West Middlesex Hospital, London, will visit Melbourne from November 24 to 28. She is an outstanding authority on geriatric rehabilitation. While in Melbourne she will visit various hospitals and institutions for the care

of the aged, and on Thursday, November 27, at 8.15 p.m., will give the following lecture for the medical profession in the B.M.A. Hall, East Melbourne: "The Responsibility of the Family Doctor in the Medical Care of Old Persons."

Dr. A. Austin Eagger, who is Medical Director of the Slough Industrial Health Service, England, is touring under the auspices of the Nuffield Foundation, and will visit Melbourne from November 28 to December 11. He will give the following lectures at 8.15 p.m. in the B.M.A. Hall, East Melbourne: Monday, December 11, "The Slough Industrial Health Service: An Experiment in the Provision of an Area Industrial Health Service"; Thursday, December 4, "The Health of the Worker in Industry".

SUMMARY FOR 1959.

For the convenience of those wishing to make arrangements for post-graduate study in 1959, the Committee will publish in a few weeks' time a summary of courses to be conducted next year.

INFORMATION.

The Melbourne Medical Post-Graduate Committee is situated at 394 Albert Street, East Melbourne, C.2. Telephone: FB 2547.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

Medical Research Fellowships.

Applications are invited for the following medical research fellowships for the year 1959:

The Reginald Maney Lake Scholarship and Amy Laura Bonamy Scholarship for pathological research work; the Anderson Stuart Fellowship for research in any branch of medical science; the Liston Wilson Fellowship for research in spastic paralysis or some closely allied subject; the Sister Sanders Scholarship for part-time research in the prevention of diseases in children; the Norman Haire Fellowship for

research on sex, continuing and expanding work the nature of which is already being done in the Faculty of Medicine.

Fellowships are renewable for a second and, in certain circumstances, for a third year. All fall due on January 1, 1959. All are to the value of £1252 *per annum*, except the Sister Sanders Scholarship, which is to be determined; however, the stipend for the other fellowships is at present under review.

Applications for fellowships for 1959 should be made to the Registrar, and will close on November 30, 1958. The fellowships for 1959 will be awarded in December, 1958. Application forms may be obtained from the Registrar's office. Details of these fellowships are given on pages 497-501 of the University Calendar for 1958.

Naval, Military and Air Force.

APPOINTMENTS.

The following appointments, changes etc. are published in the *Commonwealth of Australia Gazette*, No. 46, of August 21, 1958.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Confirmation in Rank.—Surgeon Lieutenant (for Short Service) (on probation) Arthur Trevor Thompson is confirmed in the rank of Surgeon Lieutenant (for Short Service), with seniority in rank of 26th June, 1957.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Reserve.

Promotions.—Surgeon Lieutenants Eric Osborne Longley and Richard John Mulhearn are promoted to the rank of Surgeon Lieutenant-Commander, dated 8th January, 1957, and 23rd April, 1958, respectively.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED SEPTEMBER 28, 1958.¹

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	6(4)	4(2)	5(2)	..	..	..	..	..	15
Amoebiasis
Anchylorhachitis	7	..	7
Anthrax
Bilharziasis
Brucellosis
Cholera
Chorea (St. Vitus)	1	..	..	..	..	..	..	1
Dengue
Diarrhoea (Infantile)	2(2)	12(9)	5(5)	1(1)	..	..	1	6	27
Diphtheria
Dysentery (Bacillary)	2(2)	..	2(2)	..	..	..	..	4
Encephalitis	2(2)	1(1)	..	..	..	..	..	3
Filaria
Homologous Serum Jaundice
Hydrotic
Infective Hepatitis	113(27)	14(9)	16(2)	5(3)	1(1)	2	2	1	154
Lead Poisoning
Leprosy	1(1)	..	..	..	1	..	2
Leptospirosis
Malaria
Meningococcal Infection	1	1	1(1)	1(1)	..	..	..	..	4
Ophthalmia
Ornithosis
Paratyphoid
Plague
Poliovirus	2	6(6)	..	..	..	1 ²	..	..	9 ²
Puerperal Fever
Rubella	80(69)	3(3)	14	164(146)	1(1)	..	4	266
Salmonella Infection
Scarlet Fever	14(8)	15(13)	5(2)	3(3)	1(1)	..	..	..	38
Smallpox	1	..	..	..	..	..	1
Tetanus	5	..	..	..	5
Trachoma
Trichinosis
Tuberculosis	29(21)	14(12)	16(10)	3(2)	8(4)	3	1	..	74
Typhoid Fever
Typhus (Flea-, Mite- and Tick-borne)	1	..	..	..	..	..	1
Typhus (Louse-borne)
Yellow Fever

¹ Figures in parentheses are those for the metropolitan area.

² One case doubtful.

Transfers to the Retired List.—The following are transferred to the Retired List: Surgeon Lieutenant-Commander Dennis Thorman Shortridge, dated 31st March, 1958. Surgeon Commander James Estcourt Hughes, dated 28th May, 1958. Surgeon Lieutenant-Commander Colin Alfred Cameron Galbraith, dated 1st June, 1958. Surgeon Commander David Norman Livingstone Seward, dated 2nd June, 1958.

Termination of Appointments.—The appointments of Conrad James Primmer and Stanley Henry Watson as Surgeon Lieutenants are terminated, dated 31st May, 1958, and 6th June, 1958, respectively.

Royal Australian Naval Volunteer Reserve.

Appointments.—Surgeon Lieutenant-Commander Edgar John Hardcastle, Royal Australian Naval Reserve, is appointed Surgeon Lieutenant-Commander, with seniority in rank of 26th August, 1951, dated 1st June, 1958.

The following appointments, changes, etc., are published in the *Commonwealth of Australia Gazette*, No. 48, of August 28, 1958.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force.

Medical Branch.

The probationary appointment of Pilot Officer A. Kauler (055421) is confirmed and he is promoted to the rank of Flying Officer, 15th July, 1958.

The probationary appointment of Flight Lieutenant J. O'Halloran (0218190) is terminated, 9th May, 1958.

The resignation of the following Squadron Leaders is accepted: N. L. Groves (025211), 10th April, 1958; M. A. May (018705), 20th June, 1958.

Notice.

THE CHILDREN'S MEDICAL RESEARCH FOUNDATION OF N.S.W.

The following is a list of donations to the Children's Medical Research Foundation of N.S.W. received from members of the medical profession in the period September 24 to 30, 1958.

Dr. John R. Sands: £26 5s.
Drs. A. and F. Innes-Brown: £12 12s.
Dr. and Mrs. G. R. Elliott: £10 10s. 6d.
Dr. and Mrs. Robert G. Woods, Dr. Joan Asher, Dr. Jean Lyle, Drs. A. Owen, E. Lee and B. P. Cahill, Dr. F. N. Rodda, Dr. Robert Burns, Dr. J. E. Blackman: £10 10s.
Dr. Maisie H. Asher, Dr. R. H. Bennette, Dr. Keith R. Gollan: £10.
Dr. W. H. Payne, Dr. E. C. Palmer, O.B.E., Dr. G. M. Brodie, Dr. R. V. W. Roberts: £5 5s. 6d.
Dr. Neil D. Campbell, Dr. R. Kent Burnett, Dr. and Mrs. R. M. Hollings, Dr. Ashley Jackson: £5 5s.
Dr. Leonard Green, Drs. Ian and Joan Cameron, Dr. Sonia Goldman, Dr. A. Clifford, Dr. K. S. Martin: £5.
Dr. Ruth Barry: £2 2s. 6d.
Dr. and Mrs. H. Smartt: £2 2s.
Dr. R. J. Marshman: £1 1s.

Previously acknowledged: £6231 2s. 9d. Total to date: £6456 6s. 9d.

Medical Appointments.

Dr. S. L. Germon has been appointed a Public Vaccinator, Victoria.

Dr. T. A. R. Dinning has been appointed Honorary Neurosurgeon (with the status of Assistant Surgeon) at the Royal Adelaide Hospital, Adelaide.

Dr. H. D. Sutherland has been appointed Honorary Thoracic Surgeon (with the status of Assistant Surgeon) at the Royal Adelaide Hospital, Adelaide.

Dr. J. V. Gordon has been appointed Honorary Neurologist (with the status of Assistant Physician) at the Royal Adelaide Hospital, Adelaide.

Dr. C. G. Paul has been appointed Honorary Clinical Assistant, Department of Surgery, at the Royal Adelaide Hospital, Adelaide.

Nominations and Elections.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Heyko-Porebski, Jan Antoni, M.B., 1936 (Univ. Poznan) (registered in accordance with the provisions of Section 17 (2A) of the *Medical Practitioners Act*, 1938-1958), Parramatta District Hospital, Parramatta.

Deaths.

THE following death has been announced:

WALL.—Frederick Lawrence Wall, on September 25, 1958, at Adelaide.

Diary for the Month.

OCT. 21.—New South Wales Branch, B.M.A.: Medical Politics Committee.

OCT. 22.—Victorian Branch, B.M.A.: Council Meeting.

OCT. 23.—New South Wales Branch, B.M.A.: Clinical Meeting.

OCT. 24.—Queensland Branch, B.M.A.: Council Meeting.

OCT. 25.—New South Wales Branch, B.M.A.: Branch Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales. Anti-Tuberculosis Association of New South Wales. The Maitland Hospital.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

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